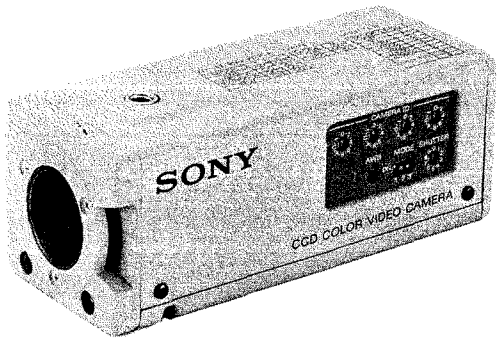
CCD Color Video Camera

DXC-107/107P



SONY®

SERVICE MANUAL

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SECTION 1
OPERATION

1-1. FEATURES

The DXC-107/107P is a color video camera which uses a CCD (Change Coupled Device), a solid state image sensor.

High quality picture
- High resolution: The CCD used in the camera has 768×492 picture elements (for DXC-107) and 752×582 picture elements (for DXC-107P), ensuring a high resolution picture.
- Very faint after-images: A clear picture can be obtained even when shooting a rapidly moving object or shooting in a place where illumination is very low.
- Minimum image distortion: Pictures can be shot in precise geometry.

High sensitivity
Will produce an image even in very poor lighting.

Four modes for white balance adjustment
You can choose the mode appropriate for the lighting conditions.

Electronic shutter with wide range of operating speeds
This camera has an electronic shutter whose operating speed can be selected from among eight settings. Of the eight settings, seven are fixed settings ranging from 1/60 to 1/10000 sec. (for DXC-107) and 1/50 to 1/10000 sec. (for DXC-107P); the last one is a setting for automatic shutter speed control (CCD IRIS).

CCD IRIS function
Automatically adjusts shutter speed according to the subject brightness so that the amount of exposure is steady.

Internal/external sync system
When you use a video switcher to control two or more cameras, you can input the same sync signal to all of them so that they output pictures having the same quality.

Power feed and signal transmission by a single coaxial cable
When connected to a CMA-D7/D7CE camera adaptor (not supplied) using a 75-ohm coaxial cable, the camera can receive power from and transmit the video signal to the camera adaptor via that cable. In addition, an external sync signal can be input to the camera via the same cable.

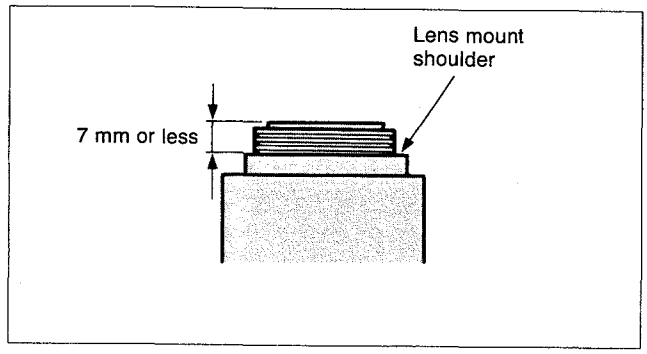
Display of Camera ID on the monitor screen
A four-character camera ID (identification) can be superimposed on the picture at the lower right corner of the monitor screen.

Compact and lightweight
The camera is so compact and lightweight that you have a wide choice for place to install: wall, ceiling, tripod, etc.

High resistance to vibration and mechanical shocks
You can obtain a fine picture with the least vibration noise even while the camera is moved.

1-2. LENS

You can use any C-mount lens as long as its projection from the lens mount shoulder is not greater than 7 mm.



Whether lens iris control is manual or automatic is no problem. You can use, for example, the Sony VCL-06XK, which is a manual iris lens.

Important

Always use a 1/2-inch C-mount lens with this camera whose CCD size is 1/2 inch. If you use a lens of different size, 2/3 inches for example, the angle of view will be different from that covered by a 1/2-inch lens.

1-3. CAMERA ADAPTOR

The camera adaptor you can use with this camera is the Sony CMA-D7/D7CE.

1-4. CARE OF THE UNIT

Safety

- This camera is designed for operation on a power supply meeting the requirements indicated in the "Specifications" on page 1-10.
- Never open the body of the camera.
- Should any material, liquid or solid, get into the body, unplug the AC power cord of the camera adaptor, and have the camera checked by qualified personnel before operating it further.

Operation

- Avoid rough handling or mechanical shocks.
- Operate the camera at a temperature ranging from 0°C to 40°C (32°F to 104°F).

Installation

- Allow adequate air circulation to prevent internal heat build-up.
- Do not install the unit near a heat source such as a radiator or air duct or in a place subject to direct sunlight.

Cleaning

Clean the lens and filter with a blower.
Clean the body, panel and controls with a dry soft cloth, or soft cloth lightly moistened with a mild detergent solution. Do not use any organic solvents, such as alcohol or benzine, which might damage the finish.

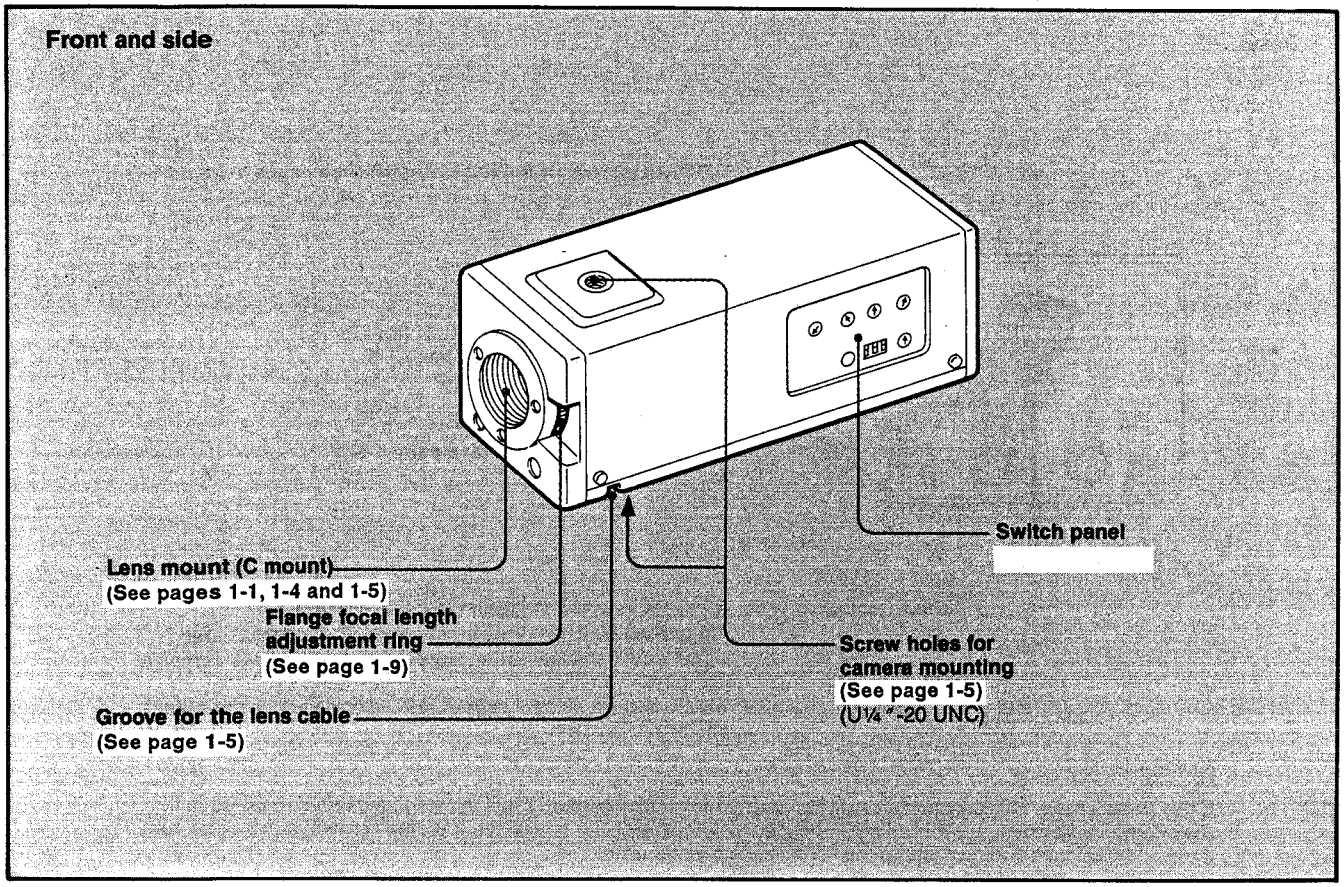
Repacking

Do not discard the carton. It affords maximum protection for shipping the camera. Repack the camera as it was originally packed at the factory.

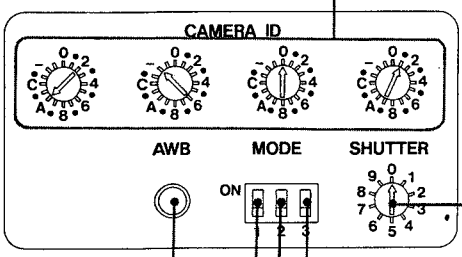
If you have any questions about this camera, contact your authorized Sony dealer.

1-5. LOCATION AND FUNCTION OF PARTS

Front and side



Switch panel



CAMERA ID (identification) setting switches (See page 1-8)
Sets a four-character camera ID to be superimposed on the picture at the lower right corner of the monitor screen.

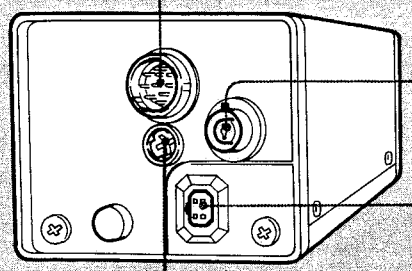
SHUTTER switch (See page 1-8)
Selects one of the seven fixed shutter speeds or the CCD IRIS mode for automatic shutter speed adjustment.

MODE switches 1 and 2 (See page 1-7)
Set the white balance adjustment to one of the four modes.

MODE switch 3 (See page 1-8)
Turns the AGC on or off (with this switch set to OFF, the gain is 0 dB).

AWB (auto white balance) button (See page 1-7)
When the MODE switches 1 and 2 are set for "AWB" (automatic white balance), pushing this button causes the white balance to be adjusted automatically according to the lighting conditions. The adjusted value will be stored in the built-in memory.

Rear



⎓ DC IN (input) connector (12-pin) (See pages 1-6 and 1-7)

VIDEO OUT (output)/⎓ DC IN (input) connector (BNC type) (See page 1-6)

LENS connector (4-pin) (see page 1-5)

H (horizontal) PHASE control screw
Adjusts the H phase difference between the external sync signal and the video output signal when two or more cameras are used.
Turn the screw using a screwdriver, while checking the result on an oscilloscope.

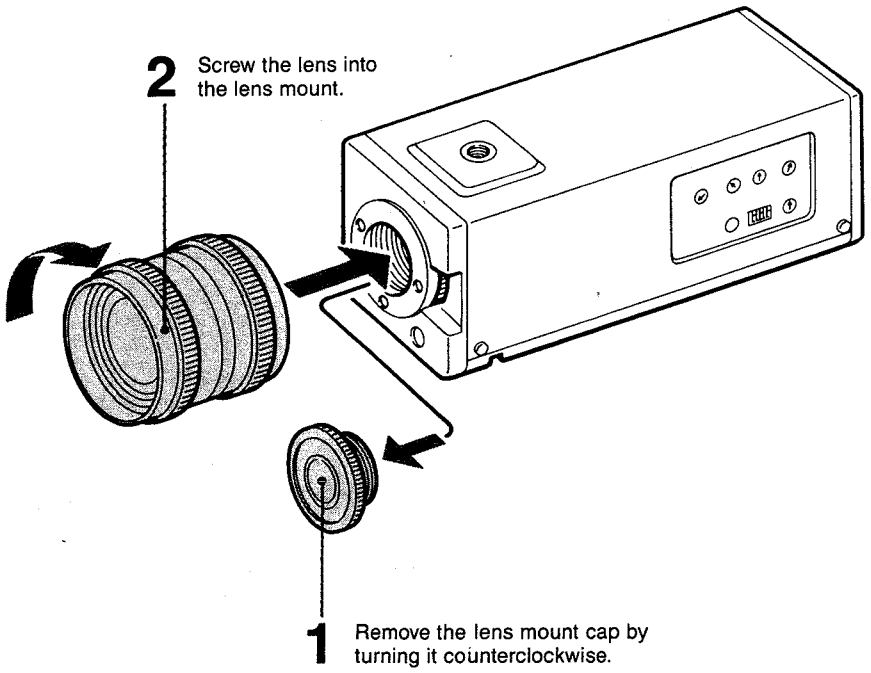
Note

If the signal of this unit is synchronized with an external sync signal whereas the video monitor connected is in the internal sync mode, a vertical line—horizontal blanking signal— may appear on the screen. In that case, turn the H PHASE control screw so that the vertical line disappears.

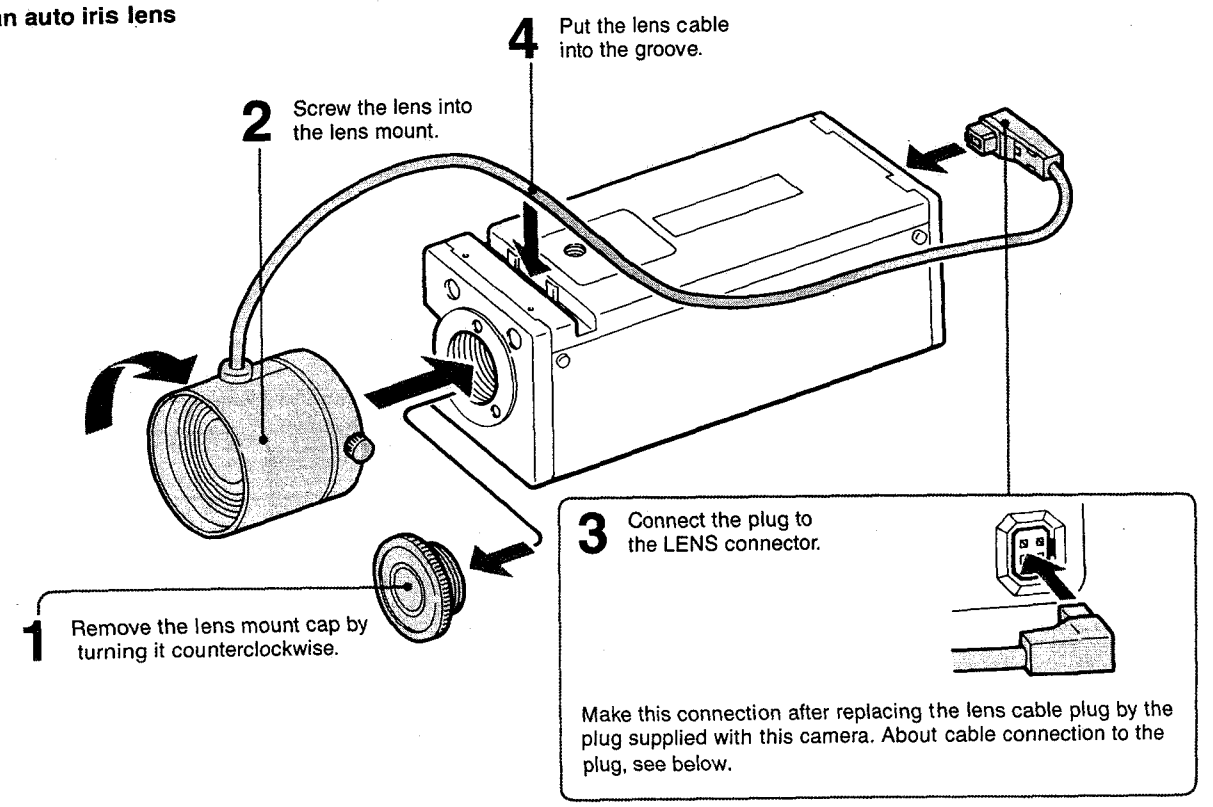
1-6. INSTALLATION

Attaching the Lens

For a manual iris lens



For an auto iris lens

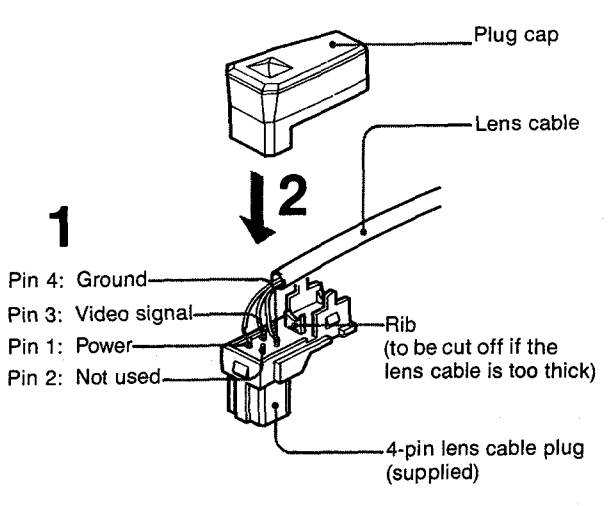

4 Put the lens cable into the groove.
2 Screw the lens into the lens mount.
3 Connect the plug to the LENS connector.
1 Remove the lens mount cap by turning it counterclockwise.
Make this connection after replacing the lens cable plug by the plug supplied with this camera. About cable connection to the plug, see below.

Replacing the lens cable plug with the 4-pin plug supplied with the camera

To use an auto iris lens, replace its cable end plug by the 4-pin plug supplied with the camera, as shown below.

1 After disconnecting the lens cable from its plug, solder the cable wires to the pins on the supplied plug as illustrated. (For identification of the cable wires, refer to the manual for your lens.)

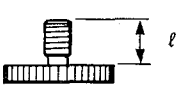
2 Place the cap on the plug.



Installing the Camera

- When installing the camera on a wall or ceiling, use an appropriate support or mounting bracket. Fix the camera to the support or bracket using screws as specified below, which match the screw holes in the camera body.

U¼"-20 UNC
ℓ: ISO standard 4.5 mm ±0.2 mm
ASA standard 0.197 inches



- When mounting the camera on a tripod, use the screw hole provided in the bottom of the camera.

For more details about installation, consult your authorized Sony dealer.

1-7. CONNECTIONS

Notes on power supply

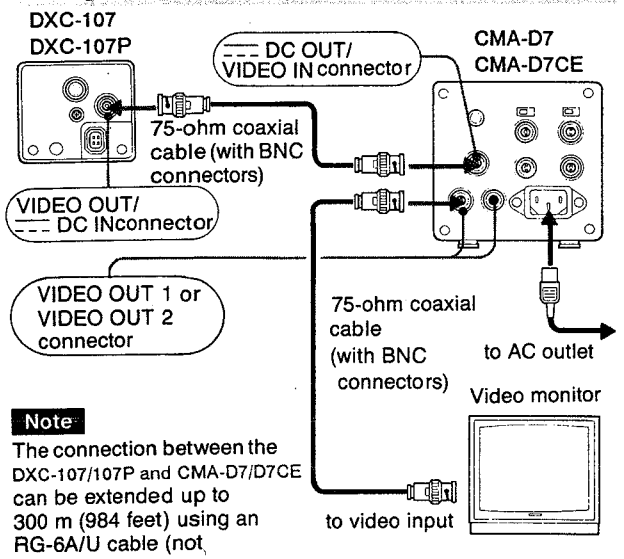
To supply power from the CMA-D7/D7CE camera adaptor to the camera, use either.

- a 75-ohm coaxial cable between the VIDEO OUT/⎓ DC IN connector of the camera and the ⎓ DC OUT/VIDEO IN connector of the CMA-D7/D7CE, or
- a 12-pin CCMC cable between the ⎓ DC IN connector of the camera and the CAMERA connector of the CMA-D7/D7CE.

Do not make these connections at the same time. If you do, the camera will not output the video signal properly.

When Not Inputting the Sync Signal

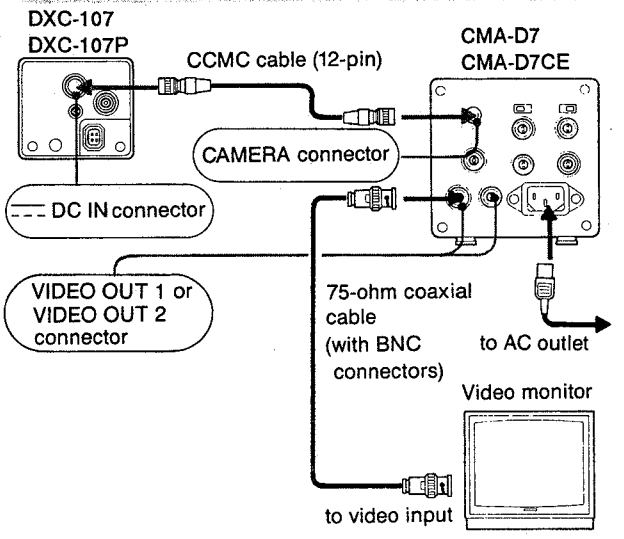
Using the VIDEO OUT/⎓ DC IN connector



Note

The connection between the DXC-107/107P and CMA-D7/D7CE can be extended up to 300 m (984 feet) using an RG-6A/U cable (not supplied).

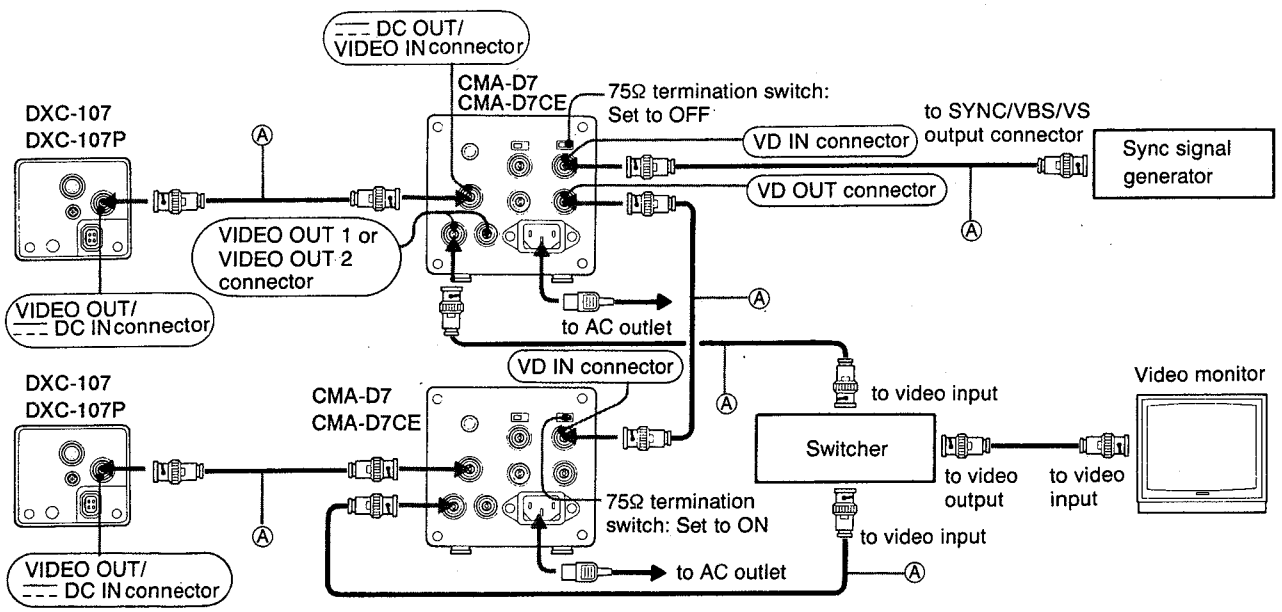
Using the ⎓ DC IN connector (12-pin)



When Inputting the Sync Signal (Connection example for operating two or more cameras using a switcher)

When an external sync signal (SYNC, VBS, or VS) is input to the unit, the unit is synchronized with it automatically. However, note that the chrominance signal cannot be synchronized when you input a VBS. Also note that you cannot synchronize the unit with an HD or a VD signal.

Using the VIDEO OUT/⎓ DC IN connector

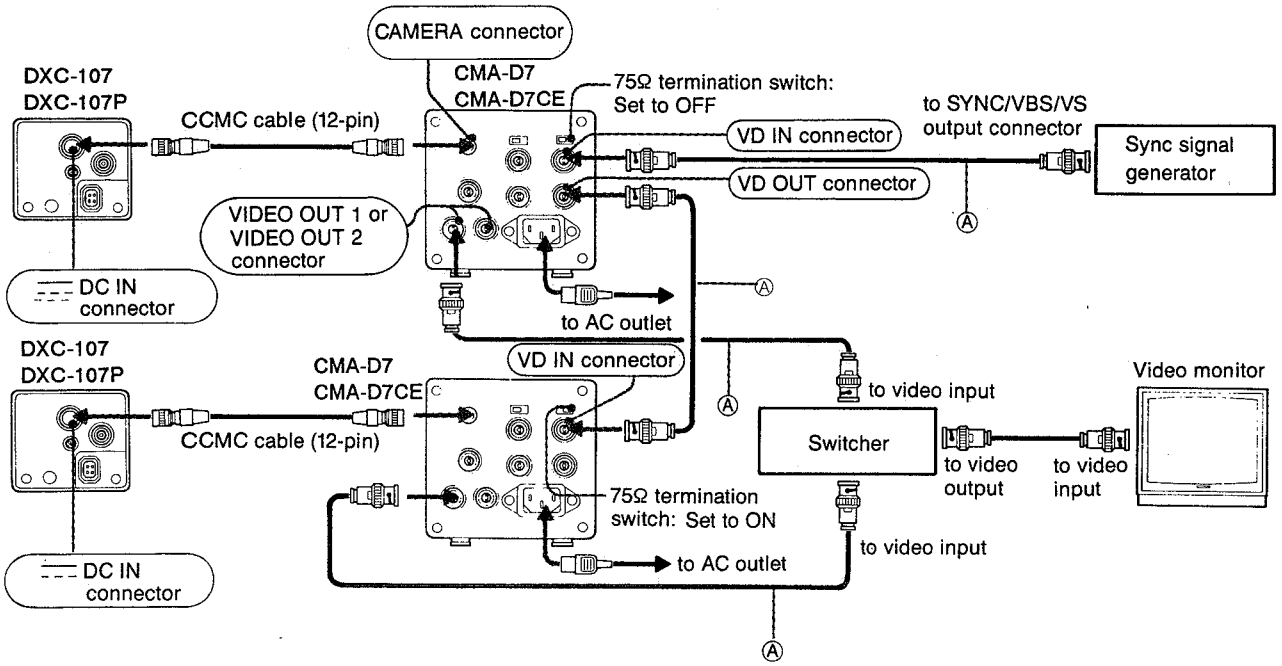


Note

Ⓐ : 75-ohm coaxial cable (with BNC connectors)

The connection between the DXC-107/107P and CMA-D7/D7CE can be extended up to 300m (984 feet) using an RG-6A/U cable (not supplied).

Using the ⎓ DC IN connector (12-pin)



Ⓐ : 75-ohm coaxial cable (with BNC connectors)

1-8. OPERATION

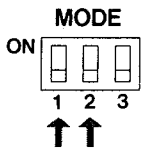
Preparation

1. Check that all the units are connected properly.
2. Turn the POWER switch of the CMA-D7/D7CE to on.
3. Turn on the video monitor, and adjust its controls properly.
4. Set the MODE switch 3 of the camera to OFF (GAIN: 0 dB). (Factory setting: OFF)
5. Illuminate the object properly.
6. When using a manual iris lens, adjust the iris depending on the lighting conditions.

When the preparation as described above has been completed, carry out the following adjustments and settings.

Adjusting the White Balance
(for lifelike color reproduction)

Select the mode of white balance adjustment according to the lighting conditions by setting MODE switches 1 and 2 appropriately.



Mode	Color temperature	MODE switch settings	
		1	2
AWB (auto white balance)	When the AWB button is pressed, the white balance is adjusted according to the color temperature of the subject automatically. The adjusted white balance is stored in the built-in memory until readjustment. This mode is suitable for shooting to be repeated under the same conditions.	OFF	OFF
INDOOR	3200 K (fixed): Suitable for indoor shooting under the incandescent light.	ON	OFF
OUTDOOR	5600 K (fixed): Suitable for outdoor shooting on sunny days.	OFF	ON
ATW (auto tracing white balance)	The white balance is adjusted according to the transition of the color temperature of the subject. This mode is suitable for shooting with variable lighting.	ON	ON

(Factory setting: INDOOR)

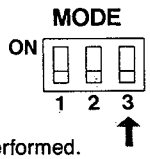
For better color setup according to the lighting conditions (Automatic white balance adjustment)

1. Set the white balance mode to AWB.
2. Shoot a white object (such as a white cloth or a white wall) so that it fills the screen.
3. Press the AWB button with the point of a ball-point pen or the like.

The white balance will be adjusted automatically so that the object looks white on the screen. The adjusted white balance is stored in the built-in memory and it is retained even if the camera is turned off. When the white balance mode is set to AWB next time, the white balance is set to the value retained in the built-in memory automatically, so that you can start shooting under the same lighting conditions immediately.

Switching the Automatic Gain Control On or Off

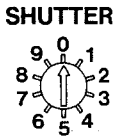
To turn the automatic gain control (AGC) for video output on or off, use MODE switch 3.



OFF (0 dB): Automatic gain control is not performed.
ON (AGC): The gain of the video circuit is adjusted automatically according to the lighting conditions of the subject.
(Factory setting: OFF)

Selecting the Shutter Speed

To select the desired shutter speed, set the SHUTTER switch in the corresponding position by turning it with a standard screwdriver.



Shutter speed (in seconds)	Switch setting
OFF (1/60: DXC-107)/(1/50: DXC-107P)	0
FL* (1/100: DXC-107)/(1/120: DXC-107P)	1
1/250	2
1/1000	3
1/2000	4
1/4000	5
1/10000	6
CCD IRIS: The exposure is adjusted by automatically varying the shutter speed according to the lighting conditions of the subject even if the lens in use is for manual iris control.	7 8 9

(Factory setting: 0)

* FL (flickerless): Setting to prevent the picture from flickering on 50-Hz (for DXC-107) and 60-Hz (for DXC-107P) power supply

Note

- It may not be possible to obtain an optimum picture using an automatic iris lens with the shutter set to CCD IRIS. If that is the case, select a fixed shutter speed (switch settings 0 through 6).
- When shooting under the light of fluorescent lamps on a 50-Hz (for DXC-107) and 60-Hz (for DXC-107P) power supply, particularly at high shutter speed or in the CCID IRIS mode, the picture may flicker. If that is the case, set the shutter speed to FL.

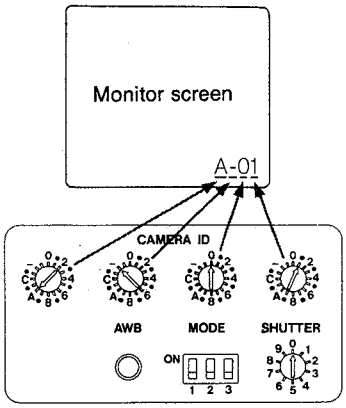
Setting the Camera ID

A four-character camera ID (identification) can be superimposed on the picture at the lower right corner of the monitor screen. When two or more cameras are used, the camera ID appearing on the monitor screen identifies the camera providing the image currently shown on the screen. To set the camera ID, set the four characters one by one using a standard screwdriver to turn the corresponding digit switches. You can set each digit to a number (0 to 9), letter (A to D), hyphen (-), or blank (no indication).

Switch setting	Display on the monitor
0 to 9	0 to 9
A to D	A to D
-	- (hyphen)
(blank)	(blank)

(Factory setting: 0000)

Example of camera ID display

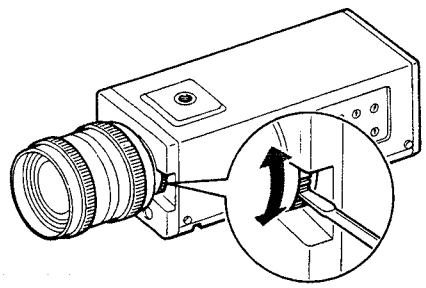


When you have completed the settings, shoot the subject and adjust the lens focus. Once you have made these adjustments, no further adjustment is necessary unless either the lighting conditions or the distance to the subject changes. To use the camera under the same conditions after turning the camera adaptor and video monitor off, just turn them on again.

1-9. ADJUSTING THE FLANGE FOCAL LENGTH

When using a zoom lens with this camera, it may be necessary to adjust the flange focal length (the distance between the lens mounting plane and the image plane). The properly adjusted flange focal length ensures that the subject is in focus whether the zoom is in the wide-angle position or telephoto position. Once the flange focal length has been adjusted, readjustment is not necessary as long as the same lens is mounted on the same camera.

1 When a manual iris lens is used, open the iris fully.
When an auto iris lens is used, adjust lighting until the iris is fully open.
2 Point the camera at an object about 3 meters (10 feet) away.
3 Set the zoom in the telephoto position.
4 Observing the monitor screen, turn the focus ring to focus on the subject.
5 Set the zoom in the wide-angle position.
6 Turn the flange focal length adjustment ring until the same subject is in focus. Do not turn the focus ring.

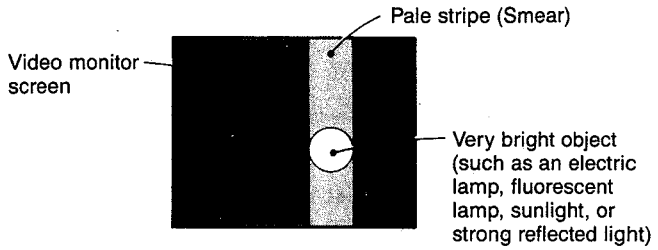


7 Repeat steps **3** to **6** until the subject is in focus both when the zoom is in the telephoto position and when it is in the wide-angle position.

1-10. SPECIAL CHARACTERISTICS OF A CCD CAMERA

The following conditions that may be observed during the use of a CCD video camera are not associated with any fault of the camera:

Smearing
The picture may be smeared when a very bright object is shot.


Pale stripe (Smear)
Video monitor screen
Very bright object (such as an electric lamp, fluorescent lamp, sunlight, or strong reflected light)

Patterned noise
This may appear over the entire monitor screen when the camera is operated at a high temperature.

Jagged picture
When fine stripes, straight lines, or the like are shot, the image monitored on the screen may appear jagged.

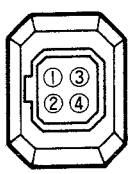
1-11. SPECIFICATIONS

Pickup device

Pickup device	Interline-transfer CCD
Color filter	Ye, Cy, Mg, G complementary color mosaic filter
Picture element	
DXC-107:	768×494 (horizontal×vertical), approximately 380,000
DXC-107P:	752×582 (horizontal×vertical), approximately 440,000
Sensing area	Equivalent to a 1/2-inch pick up tube

Optical and others

Lens mount	C mount
Signal system	
DXC-107:	NTSC color system
DXC-107P:	PAL color system
Scanning system	
DXC-107:	525 lines, 2:1 interlace, 30 frames/sec.
DXC-107P:	625 lines, 2:1 interlace, 25 frames/sec.
Sync system	Internal/external (switched automatically)
External sync signal	VS, SYNC (Sync level 0.3 Vp-p ± 6 dB), high impedance
Horizontal resolution	
DXC-107:	470 TV lines
DXC-107P:	460 TV lines
Minimum illumination	9 lux with F1.2 (AGC: ON, SHUTTER: OFF)
Sensitivity	2000 lux, F4 (GAIN: 0 dB)
Video output	1 Vp-p, sync negative, 75 ohms
Video signal to noise ratio	
DXC-107:	48 dB (GAIN: 0 dB)
DXC-107P:	46 dB (GAIN: 0 dB)
Electronic shutter	
DXC-107:	8 speeds selectable: 1/60 sec. (OFF), 1/100 sec. (FL), 1/250 sec., 1/1000 sec., 1/2000 sec., 1/4000 sec., 1/10000 sec. and CCD IRIS mode.
DXC-107P:	8 speed selectable: 1/50 sec. (OFF), 1/120 sec. (FL), 1/250 sec. 1/1000 sec., 1/2000 sec., 1/4000 sec., 1/10000 sec, and CCD IRIS mode.
White balance adjustment	4 modes selectable: indoor (3200 K), outdoor (5600 K), AWB (auto white balance), ATW (auto tracing white balance)
AGC	ON/OFF (switchable)
Camera ID superimpose	4 characters
Input/output connectors	VIDEO OUT/⎓ DC IN: BNC type DC IN: 12-pin connector LENS: 4-pin connector (with the following pin assignment)



LENS connector of the camera

Pin	Signal
1	+8.5 V, 40 mA
2	Not used
3	Video output for lens
4	Ground

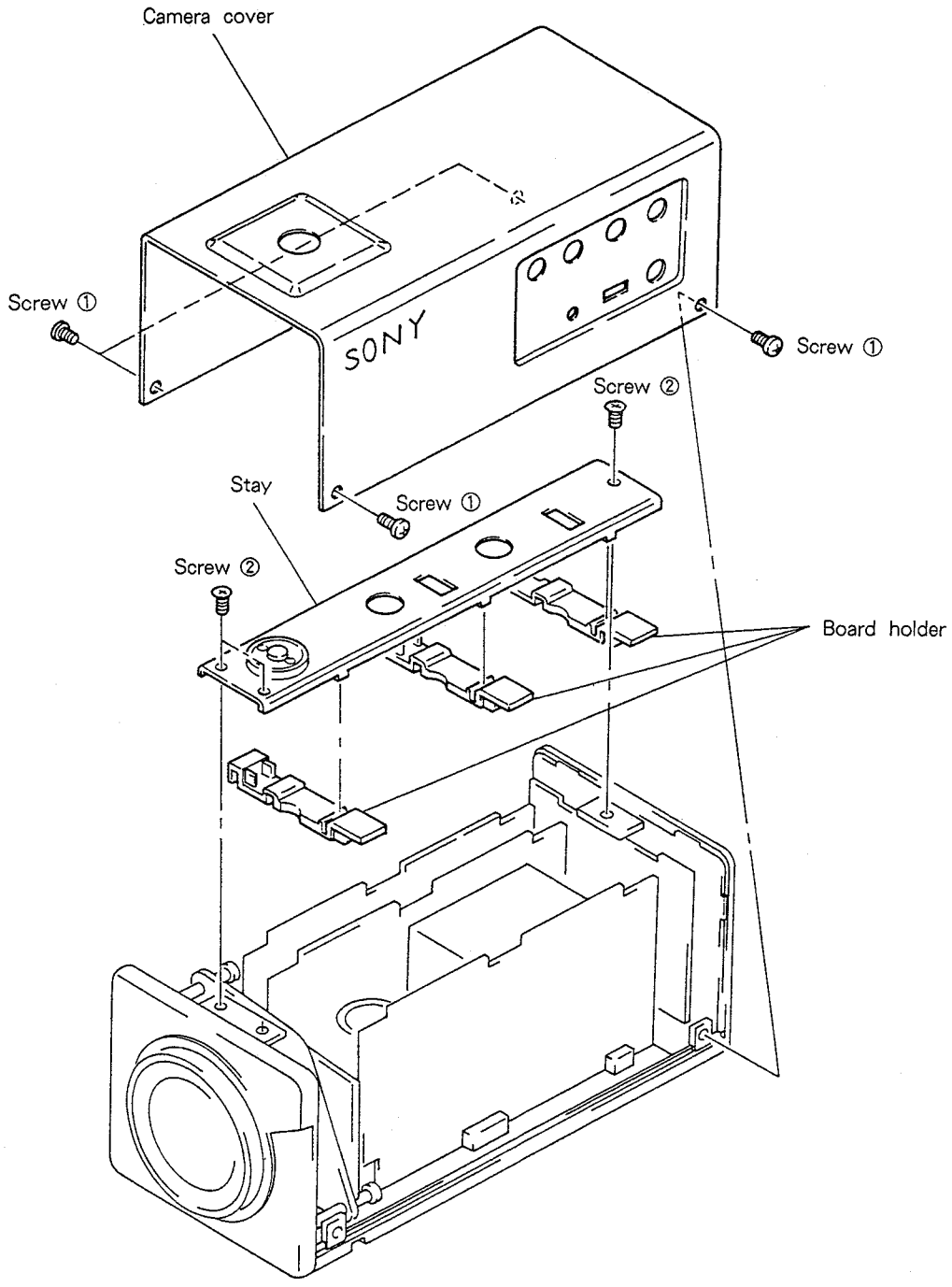
Power requirements	11–16 V DC: supplied through the ⎓ DC IN connector (when the CMA-D7/D7CE is used) 25–30 V DC: supplied through the VIDEO OUT/⎓ DC IN connector (when the CMA-D7/D7CE is used)
Power consumption	3.3 W: supplied through the ⎓ DC IN connector 6.3 W: supplied through the VIDEO OUT/⎓ DC IN connector
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	−20°C to +60°C (−4°F to 140°F)
Operating humidity	Less than 80% (no condensation allowed)
Storage humidity	Less than 90% (no condensation allowed)
Shock resistance	70G
Dimensions	55 × 50 × 130 mm (w/h/d) (2¼ × 2 × 5⅛ inches) excluding projecting parts
Weight	Approx. 360 g (13 oz)
Accessories supplied	Lens mount cap (1) 4-pin lens cable plug matching the LENS connector (1) Operation manual (1)
Accessories not supplied	CMA-D7/D7CE camera adaptor CCMC-12P02 cable (2 m) CCMC-12P05 cable (5 m) CCMC-12P10 cable (10 m) CCMC-12P25 cable (25 m) VCL-06XK manual iris lens (6 mm, F1.2)

Design and specifications are subject to change without notice.

SECTION 2
SERVICE INFORMATION

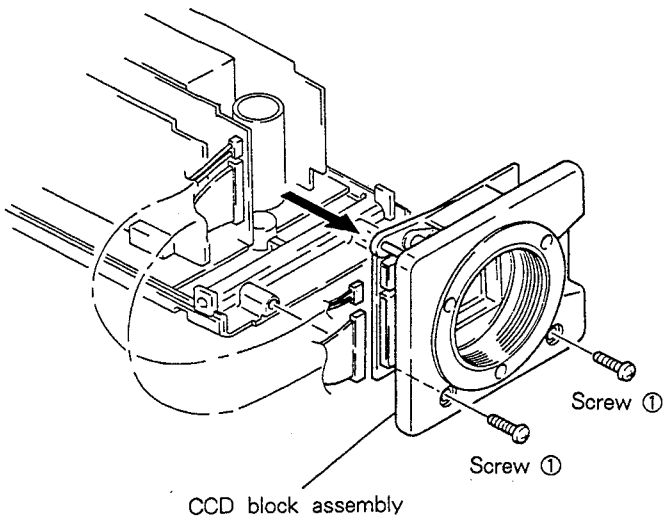
2-1. REMOVAL OF OUTER SECTION

1. Remove four screws ① (+B2 × 4), and remove the camera cover.
2. Remove three screws ② (precision +K2 × 4), and remove the stay and the board holder.



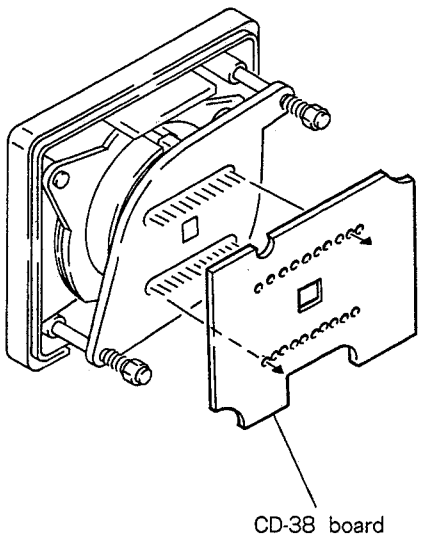
2-2. REMOVAL OF CCD BLOCK ASSEMBLY

Remove two screws ① (+B2.6 × 8), and remove the CCD block assembly.



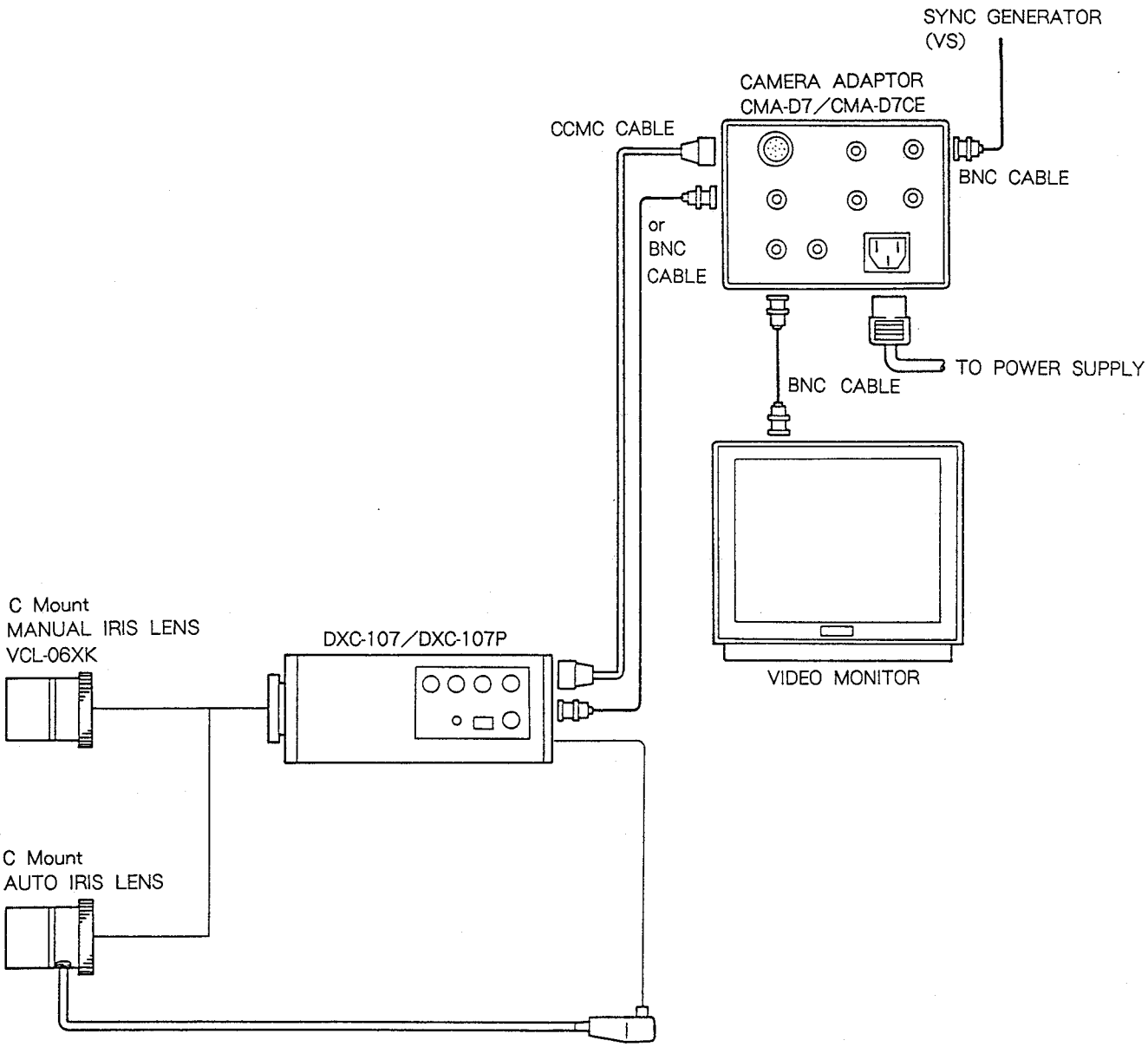
2-3. REMOVAL OF CD-38 BOARD

Desolder the soldering on the IC with soldering iron, and remove the CD-38 board.



2-4. CONNECTION

2-4-1. System Block Diagram

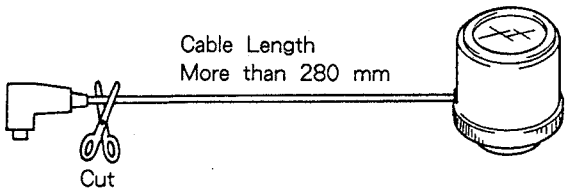


※ When it does not fit the lens connector of the DXC-107/DXC-107P, modification is necessary. See 2-4-2.

2-4-2. Replacement of the Lens Connector

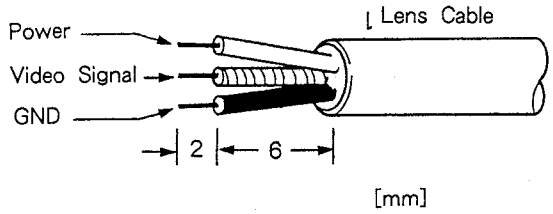
To connect the auto iris lens to the DXC-107/DXC-107P, it is necessary to replace the lens connector with the supplied 4P plug connector.
Please wire according to the below procedure.

1. Cut the lens cable just beside the connector.



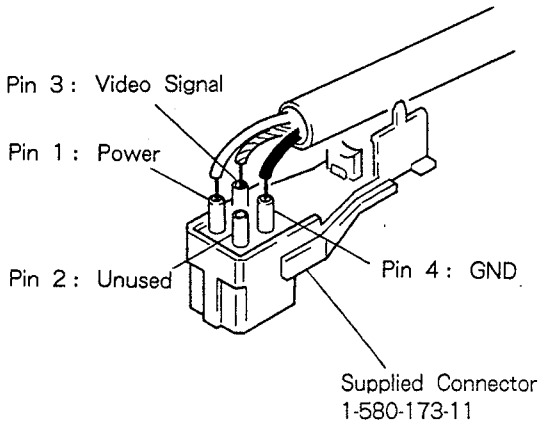
Note: Use the lens which works below +8.5V supply voltage and 40 mA current consumption.

2. Make the cable as the illustration.



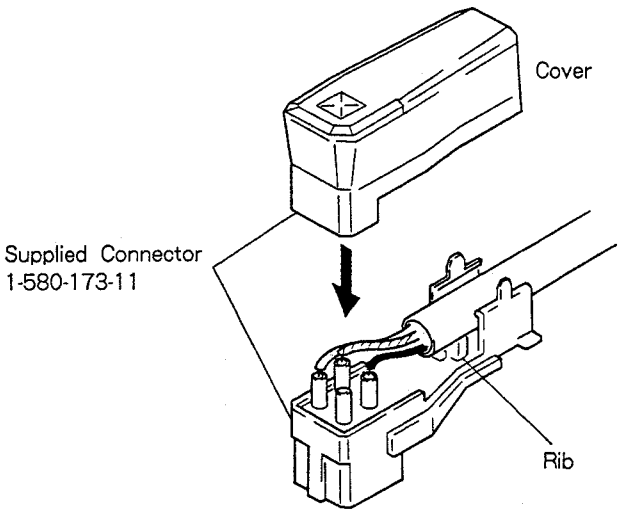
Note: As for the signal types of the core wires in the lens cable, please refer to the specifications of the lens.

3. Solder the pins of the supplied connector.



Note: Soldering should be done quickly, since too much heat may damage the pins of the connector.

4. Install the connector cover with the cable on the rib.



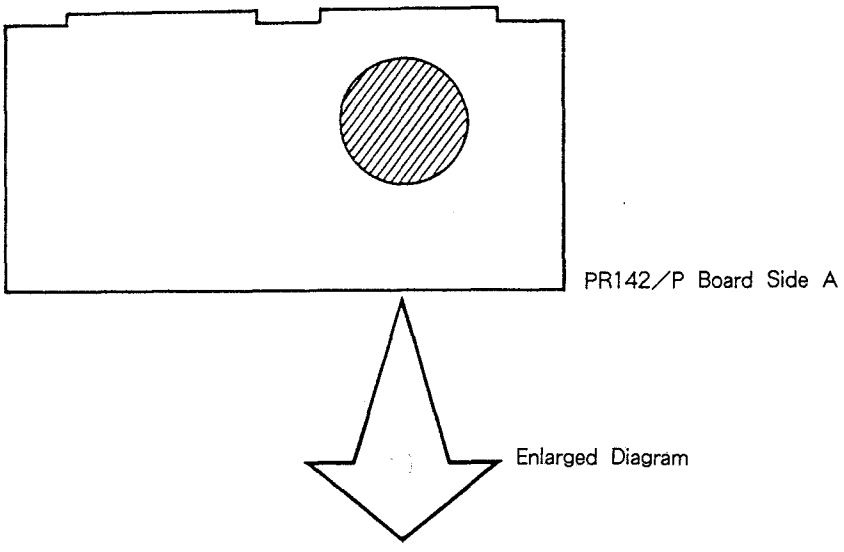
Note: If the cable is too thick to fix the cover, cut off the rib.

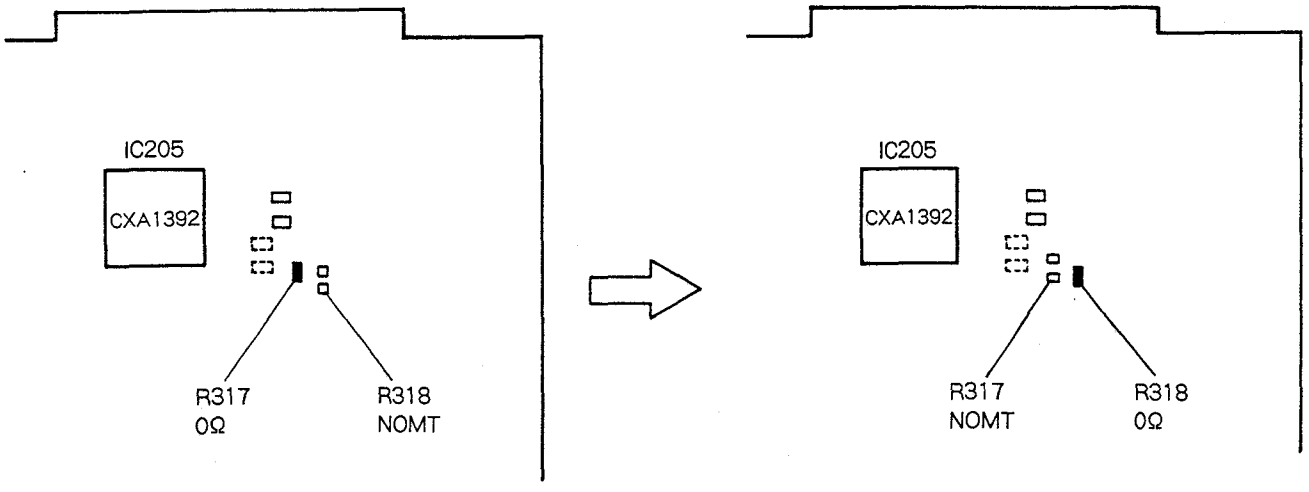
2-5. Modification to the Y/C Separation Output

The DXC-107/DXC-107P is factory-set to the composite video output, but it can be changed to the Y/C separation output by simple modification.

Board	Modification	Y/C Output Connector
PR-142P (Side A)	Remove the R317 (0Ω) and mount it on the R318 (NOMT). See the picture below.	12 PIN Multi-connector Y Output is outputted to No. 4 PIN. C Output is outputted to No. 9 PIN.

Note: After the modification, the composite video cannot be outputted. Also during the DC multiplex operation, only the Y signal is transmitted.





Factory-set : Composite Video Output

Y/C Separation Output

SECTION 3
THEORY OF OPERATION

3-1. CD-38 BOARD

The CD-38 board mounts a IC001 (CCD imager) that converts a light signal into an electric signal. Photosensors (light-sensitive devices) are arranged on the CCD chip surface. The 811/795 photosensors are arranged in the horizontal direction, and the 508/596 photosensors in the vertical direction (411,988/473,820 in total). The total number of effective pixels is 379,392/437,664 with 768/752 arranged in the horizontal direction and 494/582 in the vertical direction.

The incident light is converted into electric charges corresponding to the brightness of light using photosensor blocks. The converted electric charges are read from the photosensors to the transfer block, then sequentially transferred to the output block.

The transfer block consists of vertical transfer blocks and a horizontal transfer block. The number of vertical transfer blocks in the vertical direction of the screen is 811/795 as shown in Fig. 1. The number of horizontal transfer blocks in the horizontal direction of the screen (at the top in Fig. 1) is one.

The electric charges that are converted using photosensors are transferred to the vertical transfer blocks adjacent to each photosensor for every field. The electric charges that are transferred to each vertical transfer block are sent in parallel in the vertical direction using vertical transfer clocks V1 through V4 and sequentially transferred to the horizontal transfer block.

The horizontal transfer block transfers the electric charges in the horizontal direction using horizontal transfer clocks H1 and H2 (with a frequency of 4fsc), then sends them to the output block.

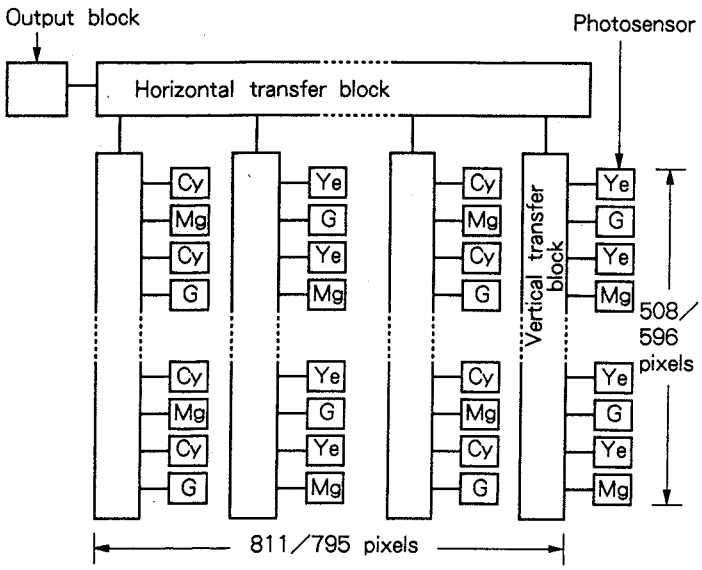


Fig. 1. Internal Structure of CCD (NTSC/PAL)

The color coding of a color filter is shown in Fig. 2.

During field read, electric charges are mixed through combination of A1 and A2 in field A and through combination of B in field B, as shown in Fig. 2. For line A1, the electric charges from the horizontal transfer block are thus transferred in the order of (G+Cy), (Mg+Ye), (G+Cy), and (Mg+Ye) signals.

This signal is processed so that a proximity signal of a Y signal and chroma (color-difference) is formed. The proximity signal is produced by adding adjacent Y signals and by subtracting the adjacent chroma (color-difference) signals.

Proximity signal of the Y signal:

$$Y=\{(G+Cy)+(Mg+Ye)\}\times 1/2=1/2(2B+3G+2R)$$

Proximity signal of the chroma (color-difference) signal:

$$R-Y=\{(Mg+Ye)-(G+Cy)\}=(2R-G)$$

For line A2, the signal from the horizontal transfer block is output in the order of (Mg+Cy), (G+ye), (Mg+Cy), and (G+Ye). Using this signal, the Y signal and chroma (color-difference) signal are balanced because they are configured identically.

Proximity signal of the Y signal:

$$Y=\{(G+Ye)+(Mg+Cy)\}\times 1/2=1/2(2B+3G+2R)$$

Proximity signal of the chroma (color-difference) signal:

$$-(B-Y)=\{(G+Ye)-(Mg+Cy)\}=-(2B-G)$$

In the chroma (color-difference) signal, R–Y and –(B–Y) signals can be alternately extracted in linear sequence. Field B is also the same as field A.

The electric charges in the output signal of IC001 (CCD imager) are converted into a voltage signal using a capacitor in the output block, then output. The signal is then output through buffer Q001 to the TG-70/P board.

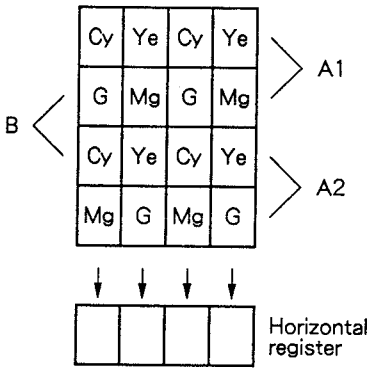


Fig. 2. Color Coding Table

3-2. TG-70/P BOARD

The TG-70/P board consists of the following:

(1) Sample and hold/AGC circuits IC102 (CXA1390R)
(2) CCD drive timing signal generator circuit IC104 (CXD1252R)
(3) CCD vertical transfer clock drive circuit IC101 (CXD1250N)
(4) Sync/external sync signal generator circuits IC107 (CXD1217M) and IC106 (CXD1216M)
(5) External sync horizontal phase adjustment circuit IC109 (µPD5555G)
(6) V sub-voltage supply/shutter control circuits
(7) Iris/AGC detector circuits
(8) 8fsc oscillator circuit

(1) Sample and hold/AGC circuits

The signal output from a CCD imager on the CD-38 board branches into two paths; data and a PG signal. The data and PG signal are then sampled and held in their timing for signal separation.

The data and PG signal that are input to IC102 are sampled and held using XSHP and XSHD sample and hold pulses. The PG signal is sampled and held three times in the order of XSHP. XSHD, and XSHP. The data is sampled and held two times in the order of XSHD and XSHP. The difference between the sampled and held data and PG signal is extracted for signal separation. The separated signal is input to the AGC amplifier and detected using a detector circuit installed outside IC102 to ensure the proper value.

(2) CCD drive timing signal generator circuit

IC104 generates a clock, sample and hold pulse, and clamp pulse required for driving the CCD by inputting the horizontal drive (HD) and vertical drive (VD) pulses output from a 8fsc oscillator circuit and sync signal generator circuit. The pulses described below are also output.

- CL: 4fsc clock
- H1, H2: CCD imager H register drive pulse
- LH1: CCD imager H register final-stage drive pulse
- XV1 to 4
  XSG1, XSG2: CCD imager V register drive pulse. This pulse is output through drive circuit IC101 to the CD-38 board.
- PG: Pre-charge gate pulse
- CLP1 to 4: Various clamp pulses
- XSHP, XSHD: Sample and hold pulse for signal separation
- XSP1, XSP2: Sample and hold pulse for color separation
- XSH1, XSH2: Sample and hole pulse for Y signal recomposition
- XDL1, XDL2: CCD 1H delay drive pulse for chroma signal

An X SUB electric charge sweep pulse used for electronic shutter control is generated by the electronic shutter (CCD Iris) Circuit on the FC-44/P board.

(3) CCD vertical transfer clock drive circuit

The CCD vertical transfer clock drive circuit drives a CCD imager V register drive pulse.

This circuit drives the XV1 through XV4, and XSG1 and XSG2 pulses output from IC104 and sends them to the CD-38 board. The X SUB electric charge sweep pulse generated on the FC-44/P board is also driven using this circuit.

(4) Sync/external sync signal generator circuits

IC106 and IC107 generate various timing signals required to produce an NTSC or PAL video signal by inputting a CL (4fsc) clock. The timing signals are as follows:

- SYNC: Composite sync signal
- BLK: Blanking signal
- HD, VD: Horizontal and vertical sync signals
- FLD: Field signal
- BF: Burst flag signal
- INT/EXT: Sync mode selection signal.
  INT (Internal sync) mode: Low
  EXT (External sync) mode: High
- H COMP OUT: 8fsc oscillator circuit control voltage output

(5) External sync horizontal phase adjustment circuit

IC109 adjusts the horizontal phase during external sync operation. The variable resistor for adjustment on the CN-435 board can be controlled by users.

(6) V SUB voltage supply/shutter control circuits

1. V SUB voltage supply circuit
   The V SUB voltage supply circuit primarily consisting of Q101 is used to supply a specified voltage to the CCD imager overflow drain. Q101 and Q102 are a regulator with the V SUB control voltage as reference voltage.
   The V SUB control voltage can be changed in the range of about 1.6 to 5.0V using RV101 and is set so that the CCD imager overflow drain voltage (at pin 4 of V SUB) is the same as the specified voltage. This voltage value is displayed on the back of the CCD imager using a code.

2. Shutter control circuit
   The electronic storage time can be controlled by adding an electric charge sweep pulse to the overflow drain DC bias (V SUB) of the CCD imager. The electric charge sweep pulse corresponding to the shutter speed is produced on the FC-44/P and output to the TG-70/P board as an X SUB pulse. (The period in which the electric charge sweep pulse is not output is defined as time of exposure. The exposure time corresponds to the shutter speed. In the normal mode, no pulse is output.)
   Electric charge sweep pulse X SUB is inverted and amplified using IC101, added to the V SUB DC voltage, and input to pin 4 of the CCD imager.

(7) Iris/AGC detector circuits

The CCD iris detector circuit primarily consists of Q108. The auto iris detection output signal is output from pin 17 of IC102 to the CN-435 board as a video signal (not including a sync signal).

The AGC detector circuit primarily consists of Q106. This circuit establishes an AGC loop together with an operational amplifier in IC102.

(8) 8fsc oscillator circuit

A 8fsc oscillating inverter is incorporated between pins 1 and 2 of IC104. A crystal oscillator and load capacity are connected to the oscillating inverter to constitute a voltage-controlled crystal oscillator (VCXO). The frequency control voltage of this oscillator circuit is output from pin 9 (H COMP OUT) of IC106.

3-3. PR-142/P BOARD

The PR-142/P board consists of the following:

(1) Signal processing circuit
IC201 (CXL1507N)
IC202 (CXA1391R)
IC203 (CXL5504M)
Chroma signal matrix circuit
Y signal processing circuit
(2) Encoder circuit
IC205 (CXA1392R)
(3) Chroma signal comb filter circuit
IC207 (CXL5504M) and its peripheral circuit
(4) Camera ID mixing circuit
IC204 (MC74HC4053)

(1) SIGNAL PROCESSING CIRCUIT

Chroma signal matrix circuit

1. C0 and Y0 signals separation
The C0 signal (2R–G or G–2R) and Y0 signal (2R+3G+2B) are separated from an S1 signal (G+Cy or Mg+Cy) and S2 signal (Mg+Ye or G+Ye).
These signals are used for R, G, and B signal matrixing.

- The C0 signal is produced by subtracting the S1 signal from the S2 signal.

In a (G+Cy)/(Mg+Ye) line:
C0=(Mg+Ye)–(G+Cy)
=(R+B+R+G)–(G+G+B)
=2R–G

In a (Mg+Cy)/(G+Ye) line:
C0=(G+Ye)–(Mg+Cy)
=(G+R+G)–(R+B+G+B)
=–(2B–G)

Therefore, 2R–G and –(2B-G) signals are alternately obtained in linear sequence.

- The Y0 signal is produced by adding the S2 and S1 signals. As shown in the following equation, they are balanced with the same configuration in any line.

Y0=(Mg+ye)+(G+Cy)
=(R+B+R+G+G+G+B)
=2R+3G+2B

2. C1 signal generator circuit
The C0 signal is a linear sequence signal of 2R–G (CR) and –(2B–G) (CB) signals. CR and CB signals are simultaneously required to matrix and produce R, G, and B signals. Therefore, this signal is produced by producing 1H-delayed signal C1 and by adding the C0 and C1 signals to it.
The C0 signal is output in reverse polarity from pin 46 of IC202. The resultant signal is input to pin 23 of IC201 and 1H-delayed using a CCD delay line to produce the C1 signal. The drive clock of the CCD 1H-delay line is XDL1 and XDL2, and its frequency is 2fsc (7.16 MHz). The C0 signal thus has a sufficient sampling frequency for a chroma signal.
The C1 signal is output in reverse polarity from pin 14 of IC201. The signal is then input through buffer Q203 to pin 48 of IC202 and output through a gain control amplifier to the RGB matrix circuit. In the gain control circuit, the C1 signal level is set so that it is equal to the C0 signal level using the voltage at pin 47 of IC202.

3. Y1 and Y2 signal creating circuit
Y0, Y1, and Y2 signals are required to produce a V aperture signal. The Y0 and Y1 signals are used as a Y signal for R, G, and B signal matrixing.
The Y0 signal is output in positive polarity from pin 52 of IC202. The signal is then input to pin 3 of IC201 and 1H-delayed using a CCD 1H delay line to produce the Y1 signal. The drive clock frequency of the CCD 1H delay line is 2fsc (7.16 MHz). The Y0 signal has thus a sufficient sampling frequency for a Y signal that is used for R, G, and B signal matrixing or a V aperture signal.
The Y1 signal is output in reverse polarity from pin 11 of IC201. The signal is then input through buffer Q202 to the pin 55 of IC202 and passed through the gain control amplifier. The resultant signal is added to the Y0 signal and output to the matrix circuit.
In the gain control circuit, the Y1 signal level is set so that it is equal to the Y0 signal level using the voltage at pin 54 of IC202.
The Y2 signal is also produced by delaying the Y1 signal by 1H still more.

4. RGB matrix circuit
The R, G, and B signals are produced from C0, C1, and Y0+Y1 signals to process a primary color signal.

- Two continuous signals CR and CB are produced from C0 and C1 signals (linear sequence signals of CR and CB signals).

When C1 signal is CR signal.
The CB signal is used as the C0 signal. The CR (C1) and CB (C0) signals become one by adding the C1 and C0 signals.

When C1 signal is CB signal.
The CR signal is used as the C0 signal. The CB (C1) and CR (C0) signals become one by adding the C1 and C0 signals.

- Y signal used for R, G, and B signal matrixing is produced by adding Y0 and Y1 signals.
- The R, G, and B signals are produced from CR, CB, and Y signals.

R signal:
$R=CR+a\times Y$
where,
value a is set using the voltage at a pin of IC202.

B signal:
$B=-CB+\beta\times(Y-CR)$
where,
value β is set using the voltage at a pin of IC202.

G signal:
$G=Y-CR+CB$

5. White balance circuit
The R, G, and B signals produced by the RGB matrix circuit, are processed using the white balance circuit so that they are white-balanced with respect to the color temperature of the subject that a camera shoots.
The R and B signals are first input to variable gain amplifiers, and the G signal is input to a fixed gain amplifier. The gain of the variable gain amplifiers is set to the white balance in the INDOOR mode (at color temperature of 3200° K) Using the voltage (R GAIN) at pin 37 of IC202 and voltage (B GAIN) at pin 40.
The R and B signals are then input to second-stage variable gain amplifiers, and the G signal is input to a second-stage fixed gain amplifier. The second-stage variable gain amplifiers are controlled using the voltage (R CONT) at pin 38 of IC202 and the voltage (B CONT) at pin 39. These voltages are output from IC404 on the FC-44/P board by controlling a microcomputer.

6. γ compensator circuit
R, G, and B signals are processing using the γ compensator circuit and sent to the color-difference matrix circuit in the next stage.

7. Color-difference matrix circuit
Color-difference signals must be produced to produce an NTSC or PAL color signal. The color-difference matrix circuit also adjusts the color reproduction.
The color-difference matrix circuit produces the color-difference signals in accordance with the expression below.
R–Y=0.7(R–G)–0.11(B–G)
B–Y=0.3(R–G)–0.89(B–G)
Hue compensation signals R–Y HUE and B–Y HUE are added to color-difference signals R–Y and B–Y. The resultant signals are output to pins 20 and 19 of IC202.

Y Signal Processing Circuit
The YH signal output from the TG-70/P board is input through low-pass filter FL201 and delay line FL202 to pin 64 of IC202.

1. γ compensator circuit
The YH signal is processed using the γ compensator circuit and sent to the YH signal 1H-delay circuit in the next stage.

2. YH signal 1H-delay circuit
The YH signal 1H-delay circuit primarily consisting of IC203 is inserted to compensate for the delay in a chroma signal channel relative to the YH signal.
The H aperture Y signal passed through a comb filter is produced using a 1H-delayed YH signal. The YH signal output from pin 4 of IC202 is input to pin 1 of IC203. The signal is then passed through a CCD delay line and sent to external low-pass filter FL203 (230 nsec delay line) so that it is delayed by 1H. The CCD delay line drive clock frequency is 4fsc.

3. YH signal gain adjustment circuit
The YH signal is input again to pin 2 of IC202. The gain that is attenuated using a YH signal 1H-delay circuit is compensated using the gain adjustment circuit. The input signal at pin 2 is output from pin 5 and input through Y/C phase adjustment delay line FL204 (70 nsec) to encoder IC205.

(2) ENCODER CIRCUIT

Chroma Signal Encoder Circuit

The encoder circuit is used to encode R–Y and B–Y color-difference signals into an NTSC or PAL chroma signal.

The R–Y signal is balanced and modulated using a +90° phase carrier, with the burst added. The B–Y signal is balanced and modulated using a 0° phase carrier, with the burst added.

The modulated R–Y and B–Y signals are added to produce a cross modulation wave and are output from pin 16 of IC202. In case of DXC-107, The signals are then passed through a chroma comb filter circuit block primarily consisting of IC207, sent to the external 3.58 MHz bandpass filter, then input again to pin 18 of IC202. At last, signals are mixed with a luminance signal and output from pin 21 as a composite video signal.

Y Signal Encoder Circuit

1. Aperture compensator circuit
   The aperture compensator circuit emphasizes the contour of a video signal and improves the resolution visually. The vertical lines on the screen are emphasized using an H aperture signal, and the horizontal lines on the screen using a V aperture signal. The H and V aperture compensation signals are added to the Y_H signal that is input to pin 40 of IC205. The resultant signal is output to the next stage.
   The H aperture compensation signal is produced using delay line FL206. Delay line FL206 employs a 70 nsec group delay similarly to FL204. The H aperture compensation signal is level adjusted using a pin 36 voltage, noise sliced, and added to this signal. In a low-illuminance subject, the voltage at pin 36 of IC205 is raised using an AGC CONT voltage. This increases the setting voltage. The H aperture compensation signal level is then degraded, and noise is reduced. The noise slice level is also set using the voltage at pin 38.
   The V aperture signal is produced using IC202 and input through Y signal phase adjustment delay line FL205 and a camera ID mixing circuit to IC205. The signal is then added to a Y signal.

2. Y gain circuit
   The Y gain circuit sets the Y signal output level of a camera to the specified value. The output level is adjusted by RV214.

3. White clip circuit
   The white clip circuit limits the Y signal peak value of a camera. The peak value is preset using a fixed resistor.

4. Setup circuit
   The setup circuit sets the Y signal black level of a camera to the specified value. The black level is adjusted using RV213.

5. Sync signal adder circuit
   A sync signal is added to the Y signal of a camera using the sync signal adder circuit and mixed with a chroma signal in the later stage. The mixed signal is output from pin 21 as a composite video signal.

(3) CHROMA SIGNAL COMB FILTER CIRCUIT (DXC-107 ONLY)

The chroma signal comb filter circuit primarily consists of IC207. This circuit eliminates the crosstalk components contained in a Y signal from the chroma signal.

(4) CAMERA ID MIXING CIRCUIT

The camera ID mixing circuit primarily consists of IC204. The camera ID signal produced on the FC-44/P board is mixed with a signal (Y signal) in the main path using this circuit.

3-4. FC-44/P BOARD

The FC-44/P board acts as a function system and consists of the circuits described below.

(1) Electronic shutter/CCD iris circuits
(2) Camera ID signal generator circuit
(3) White balance detector circuit
(4) Microcomputer circuit

(1) Electronic shutter/CCD iris circuits

The electronic shutter circuit produces a required X SUB shutter pulse using circuit block consisting of IC405 through IC409 by setting S405 (10-position rotary switch). The pulse is then passed through the MB-300 board and output to the TG-70/P board. The resultant pulse is inverted and amplified using IC101 on the TG-70/P board and sent to the CD-38 board.

Similarly to an auto iris circuit, the CCD iris circuit changes the electronic shutter speed continuously and automatically using a microcomputer in accordance with the illuminance of a subject.

The relation between the switch S405 position and shutter speed is shown below.

DXC-107	DXC-107P
0: OFF (1/60 second)	OFF (1/50 second)
1: FL (1/100 second)	FL (1/120 second)
2: 1/250 second	1/250 second
3: 1/1000 second	1/1000 second
4: 1/2000 second	1/2000 second
5: 1/4000 second	1/4000 second
6: 1/10000 second	1/10000 second
7: CCD iris mode	CCD iris mode
8: CCD iris mode	CCD iris mode
9: CCD iris mode	CCD iris mode

(2) Camera ID signal generator circuit

The camera ID signal generator circuit is a character signal generator that superimposes four alphanumeric characters on the lower right corner of the monitor screen.

Alphanumeric characters 0 through 9 and A through D, hyphen (–), and blank (display OFF) can be set using S401 through S404 (16-position rotary switches).

(3) White balance detector circuit

The white balance detector circuit outputs R CONT and B CONT signals from IC404 in accordance with S406 setting (AWB, INDOOR, OUTDOOR, and ATW), sends them to the PR-142/P board, and controls.

In the ATW and ATB modes, the white balance detector circuit consisting of IC410, IC411, and IC412 is activated as follows:

In the ATW mode, the R, G, and B signals output from the PR-142/P board are detected and the R and B signal are made coincide with the G signal to set the white balance properly.

In the AWB mode, the same operation as in the ATW mode is performed for about one second when push-button switch S407 is pressed. The adjusted white balance data is held for a long time using an EEPROM that is built-in the microcomputer.

(4) Microcomputer circuit

The functions in steps (1) through (3) described above are all controlled using the microcomputer circuit.

In addition, this circuit adjusts part of a signal processing system as well as automatic gain control (AGC) and maximum gain adjustments.

The adjustment that is controlled using the microcomputer circuit is called an electronic variable resister (EVR) adjustment. The electronic variable resistor adjustment is performed using an analog voltage output from IC404. The microcomputer circuit also uses the XDL1 pulse (7.16 MHz), that is frequency divided by two using IC407, as a clock.

3-5. MB-300 BOARD

The MB-300 board has a DC-DC converter that supplies a required DC power to the circuit blocks on each board. This board consists of the following as well as the DC-DC converter:

(1) External sync separator circuit
(2) Video signal drive circuit
(3) Chroma suppression signal detector circuit

(1) External sync separator circuit

The external sync separator circuit primarily consists of IC503 (1/2) and IC504. This circuit separates only a sync signal from the VS signal input from harness A503 or the imposition signal during DC imposition. The separated signal is waveform-shaped, then output to the TG-70/P board. The synchronous circuit on the TG-70/P board is automatically activated so that it is synchronized with the signal that is output to the TG-70/P board.

(2) Video signal drive circuit

The video signal drive circuit primarily consists of IC502 (1/2) and IC503 (1/2). This circuit drives the composite video signal output from the PR-142/P board and outputs it to the CN-435 board.

(3) Chroma suppression signal detector circuit

The chroma suppression signal detector circuit consists of Q501, Q502, and Q503. This circuit suppresses the ATW and AWB detector circuit operations only when the chroma suppression signal contained in a video signal is detected.

The MB-300 board is also used as a relay board between the boards and firmly fixed on the cabinet to support the TG-70/P, PR-142/P, and FC-44/P boards.

3-6. CN-435 BOARD

The CN-435 board mounts input/output connectors, a constant-current circuit, and a horizontal phase adjustment variable resistor (RV301) for external synchronization.

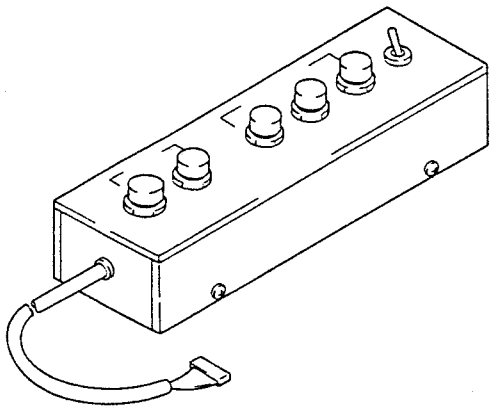
The constant-current circuit primarily consists of IC301. This circuit is used to prevent that a change in the video signal level influences the supply voltage when a video signal is sent and a power source is supplied using one coaxial cable.

SECTION 4
ALIGNMENT

4-1. PREPARATION

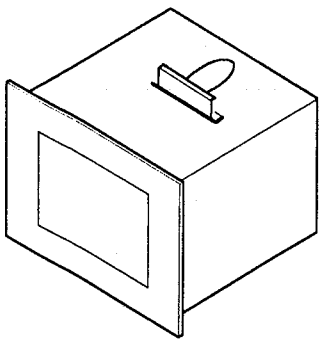
4-1-1. Fixtures and Equipment

J-6095-690-A	EVR Adjustment Fixture



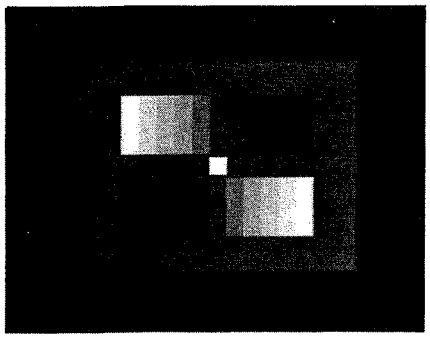
J-6029-140-A	Pattern Box PTB-500

• Light source for test charts



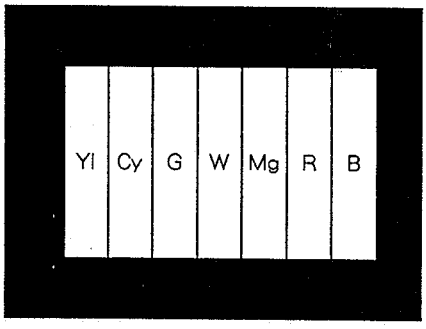
A-6026-130-A	Grayscale Chart

• For video level and gamma adjustment, etc.



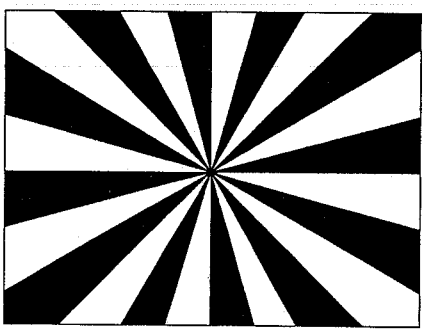
J-6020-250-A	Color Bar Chart

• For color adjustment

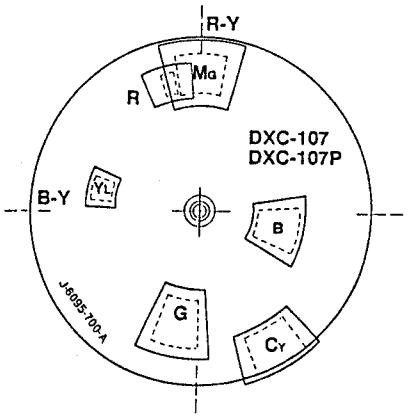


J-6024-340-B	Siemens Star Chart

• For back focus adjustment

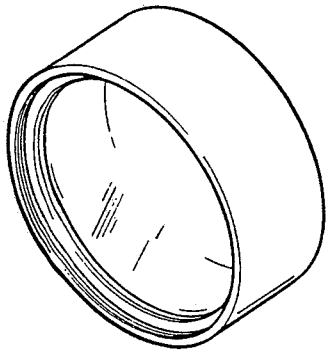


J-6095-700-A	Vectorscope Scale



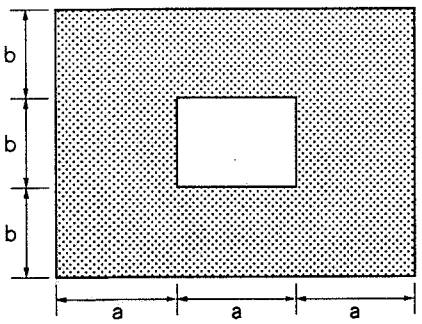
J-6080-058-A	LB-140 Filter

Color temperature conversion filter : C14



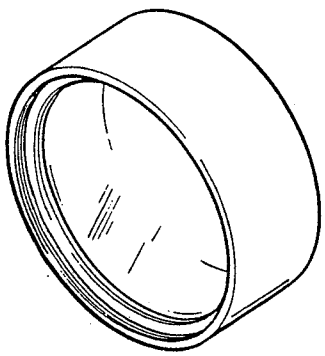
White Window Chart

Make a hole in the center of black paper as shown here, whose size should be about one third of the paper both in vertical and horizontal.



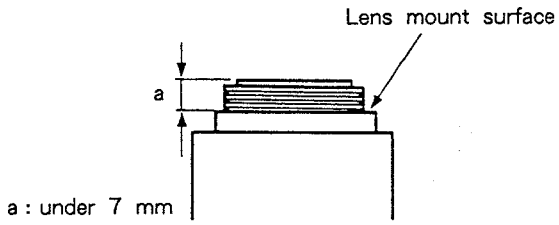
ND256 Filter

- Glass ND filter : ND8 + ND8 + ND4



Commercial measuring equipment and fixture

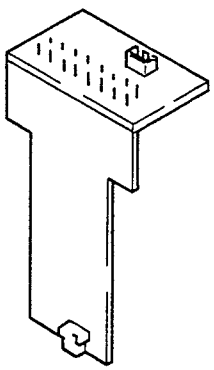
- Dual Trace Oscilloscope
- Vectorscope
- Waveform Monitor (WFM)
- Frequency Counter
- Digital Voltmeter
- Color Monitor
- Lens (C mount and manual iris type)



Note: a should be under 7 mm.

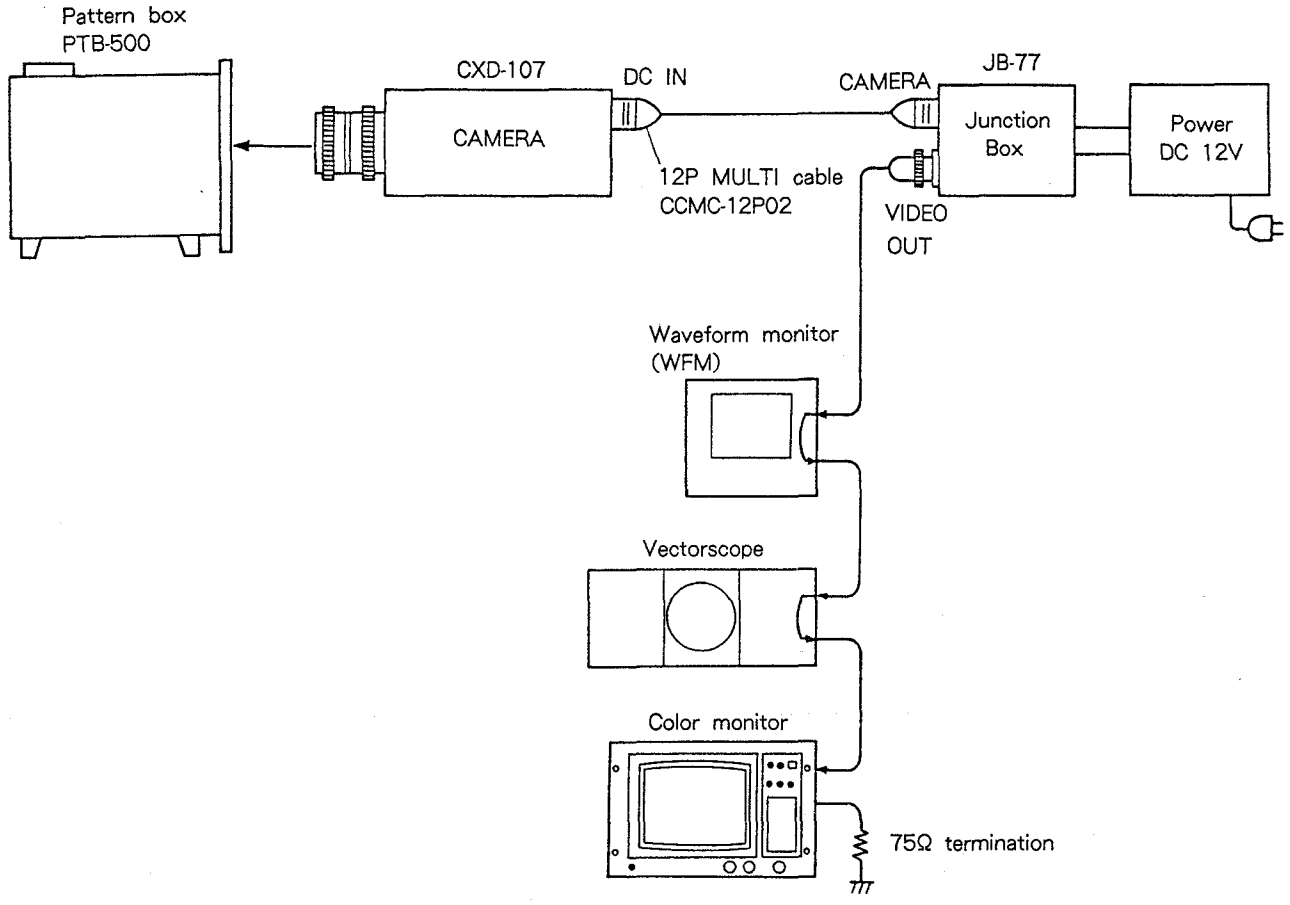
Note: General adjustment and measurement can be done with the fixture and devices in the above.
When it is necessary to measure the point which cannot be measured in general mounting, in case of repair etc., the board extension fixture in the right illustration can be used.

J-6095-222-A J-6095-210-A	Board Extension (10P) Fixture (20P)



4-1-2. Connection for Adjustment

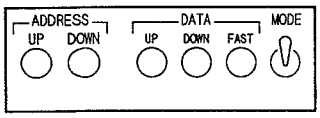
In adjustment, use the conventional DC power (DC12V) and Junction Box (JB-77) connecting as shown below.



Note: To adjust exactly, use the manual iris lens of a C mount type.

4-1-3. EVR (Electronic volume) Adjustment Fixtures

Use a special fixture for the EVR adjustment. The methods are as follows.

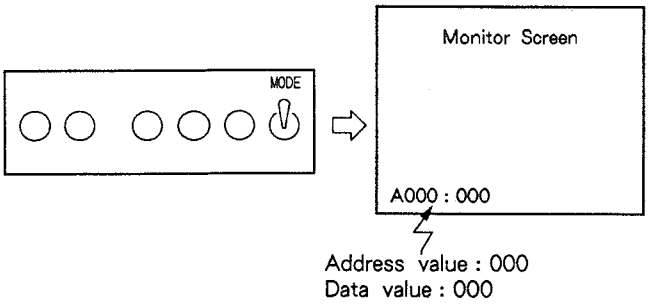


1. Preparation

Connect all the boards, and connect the EVR adjustment fixture to CN403 of FC-44/P. (Please refer to Precautions (2) (ii)). Take off the camera cover and connect the power junction box and the color monitor.

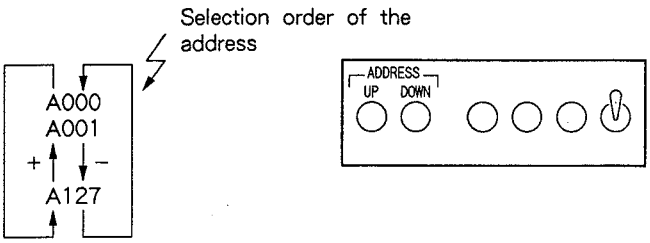
2. EVR adjustment mode

Set the mode switch to the adjustment mode, and the EVR address and data are shown in the monitor.



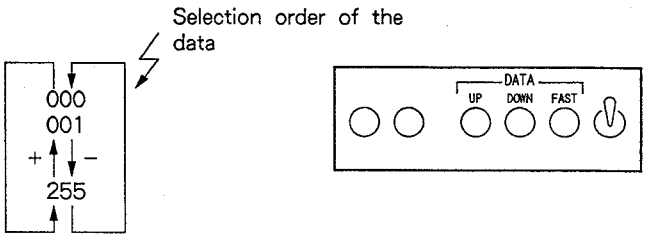
3. EVR address selection

The address (value) on the monitor can be changed by pressing the address switch (UP, DOWN) on the fixture. It changes more quickly when keep pressing.



4. EVR data selection (EVR adjustment)

The data (adjustment value) can be changed by pressing the data switch (UP, DOWN) on the fixture. (In turning the general VR, the level of the signal changes in the same manner.)



<Rough adjustment>

Quick rough adjustment is possible by pressing the data switch (UP or DOWN) and the FAST switch at the same time. The data changes by 8 steps.

5. Write down the data on the memory (Adjustment completion)

Press the address switch (UP or DOWN) to change the address value. Then the new data set by the data switch is written down on the memory for the first time, and the adjustment is completed.

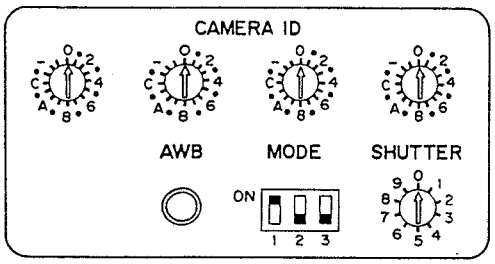
Note: If the adjustment mode is cancelled or the power is set to OFF without pressing the address switch, the new data cannot be written but the old one remains as it is

4-1-4. Switch Setting Position before Adjustment

(a) Switches

Set the switches as follows.

CAMERA ID switch:	"0" (all)	
QSHUTTER switch:	"0"	[OFF]
MODE switch 1:	ON	[WB: INDOOR]
MODE switch 2:	OFF	[WB: INDOOR]
MODE switch 3:	OFF	[AGC: OFF]



(b) Electronic Volume

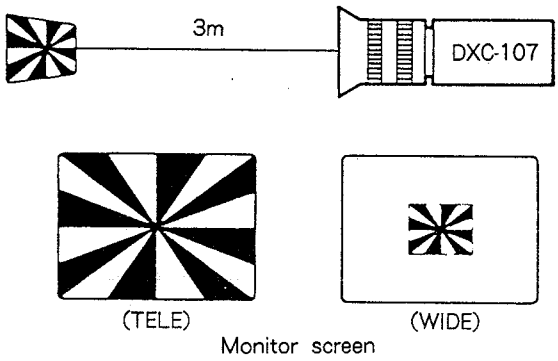
Referring to 4-1-3, preset the address data as follows.

Address	Data
A001	088
A002	144
A003	072
A004	072
A007	000
A008	000
A009	160
A010	184
A014	000
A015	000
A016	104
A017	184
A018	104
A019	184
A020	176
A021	128

4-1-5. Mechanical Back Focus Adjustment

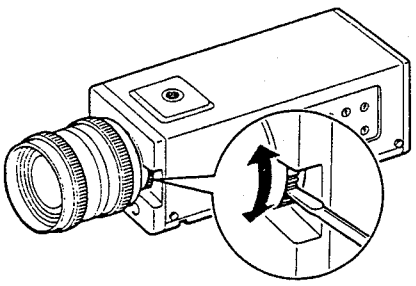
White shooting with the zoom lens, the focus may not be adjusted correctly both in telephoto and wide-angle. In that case, the back focus (the distance from the lens to the image formation plane) should be adjusted. Once it is adjusted, there is no need to readjust unless the lens is replaced.

Subject: Siemens star chart
Lens Iris: Open



Adjustment

1. Shoot the subject (siemens star chart) at the 3 meters distance, and let it appear on the monitor.
2. Set the zoom control at TELE.
3. Checking the monitor, set the focus on the subject by turning the zoom control of the lens.
4. Set the zoom control at WIDE.
5. Set the focus on the same subject in Step 3 by turning the back focus adjusting ring. In doing this, the distance ring should not be moved.



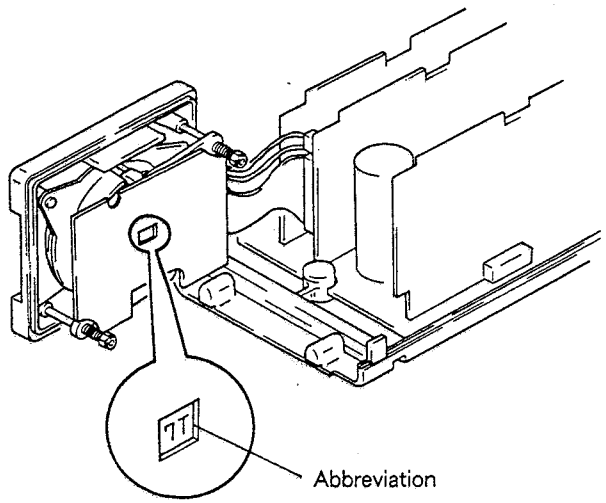
6. Repeat the steps from 2 to 5 to adjust the focus both in telephoto and wideangle.

4-2. ADJUSTMENT

Precautions

(1) Remove the camera cover referring to 2-2. REMOVAL OF CABINET (Page 2-2).

(2) Check the figures in the whole of the CD board.



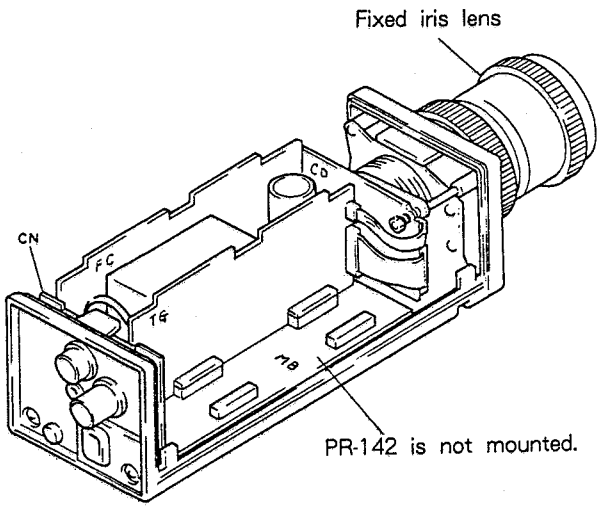
(3) The adjustment should be carried out in the following order.

① Adjustment related to the TG-70/P.

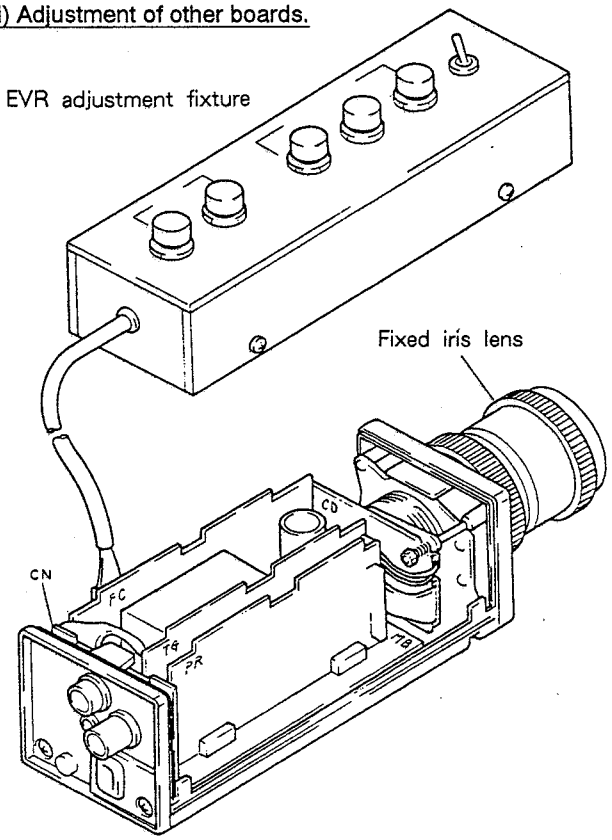
② Adjustment of other boards.

Figure (i) and (ii) show the mountings of the boards in each adjustment.

(i) Adjustment related to the TG-70/P.



(ii) Adjustment of other boards.

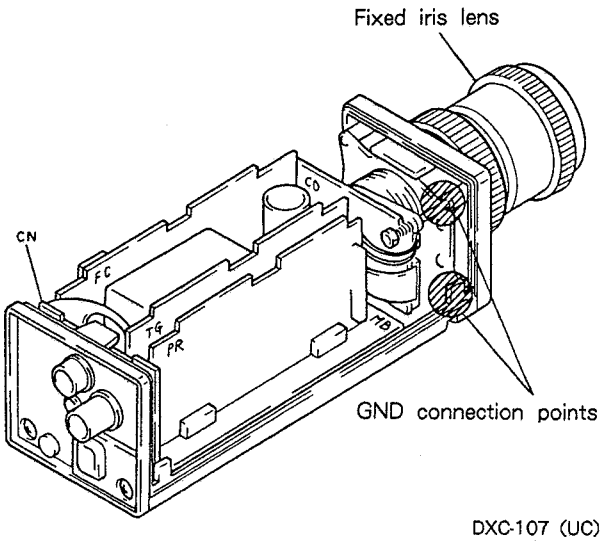


(4) To stabilize the internal condition of the camera, begin the adjustment in the mounting condition of (2) (i) at least five minutes after turning on the electricity.

(5) Regarding the standard value for which the tolerance is not specified, adjust within ± 2% of the specified value. (However, adjust the BVR data according to the specified value.)

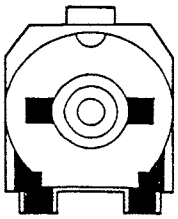
(6) For the measuring point shown in Adjustment Fixtures and Equipment or the position of a part which should be adjustment on a board, please refer to the arrangement plan below.

(7) Connect the GND connector of the measuring probe to the chassis or the pin of the camera as shown below.



4-2-1. Clock Frequency Adjustment

Equipment: Frequency counter
Test point: TP102/TG-70 board
Adj. point: ⊘ CT101 (RV103)/TG-70/P board
Preparation: Make sure that the RV103 is in mechanical center condition.



Potentiometer
Mechanical center condition

(TOP VIEW)

Spec.: NTSC; 14.31818 MHz ± 10 Hz
PAL; 14.1875 MHz ± 10 Hz

If adjustment cannot be completed still

1. Adjust the CT101 as close as possible to the standard value.
2. Adjusting the RV103 under this condition, accord the frequency to the standard value.

Note: The CT101 are not mounted in some of early lot products. In this case, adjust only with the RV103.

4-2-2. Sub-carrier Frequency Adjustment (PAL only)

Equipment: Frequency counter
Test point: TP103/TG-70/P board
Adj. point: ⊘ CT102/TG-70/P board
Preparation: Input the SYNC for the external SYNC mode.
Spec.: 17.734475 MHz ± 20 Hz

4-2-3. V SUB Voltage Adjustment

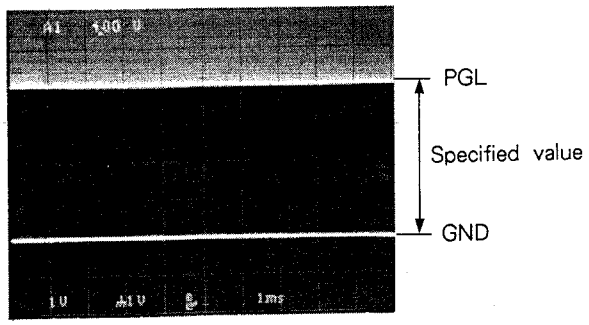
Equipment: Digital voltmeter
Test point: TP002/CD-38 board or A104-1 pin/TG-70/P board
Adj. point: ⊘ RV101/TG-70/P board
Preparation: Set the S405/FC-44/P board to "0".
(Set the electric shutter to OFF.)
Spec.: The abbreviation of V SUB voltage is shown behind the CCD chip.
(alphabet) Seeing the table below, adjust to the voltage value specified by the alphabet.

V SUB abbreviation	Voltage value	V SUB abbreviation	Voltage value
E	9.0	Q	14.0
f	9.5	R	14.5
G	10.0	S	15.0
h	10.5	T	15.5
J	11.0	U	16.0
K	11.5	V	16.5
L	12.0	W	17.0
m	12.5	X	17.5
N	13.0	Y	18.0
P	13.5	Z	18.5

4-2-4. PGL Voltage Adjustment

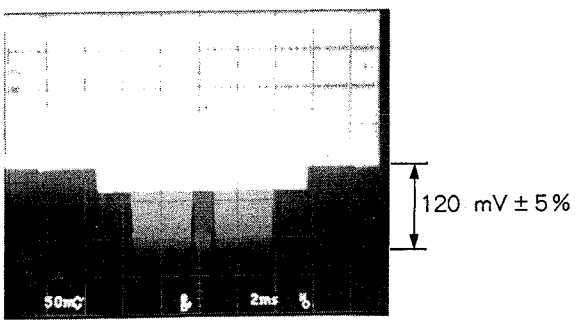
Equipment: Oscilloscope
Test point: TP003/CD-38 board or A104-9 pin/TG-70/P board
Adj. point: ⊘ RV102/TG-70/P board
Spec.: The abbreviation of the V PGL voltage is shown behind the CCD chip. (number)
Seeing the table below, adjust to the voltage value specified by the number.

V RGL abbreviation	Voltage value
1	1.0
2	1.5
3	2.0
4	2.5
5	3.0
6	3.5
7	4.0



4-2-5. CCD Output Level Adjustment

Equipment: Oscilloscope
Test point: TP001/CD-38 board or A103-2 pin/TG-70/P board
Adj. point: LENS IRIS
Preparation: Adjust the zoom control of the lens so that the gray scale chart frame matches the underscanned monitor frame.
Spec.: 120 mV ± 5%

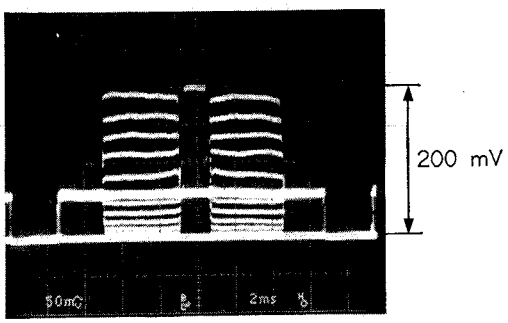


4-2-6. MAX GAIN PRESET Check

Adj. point: EVR "A010"
Preparation: Set the adjustment mode (MODE ADJ) of the EVR to ON (above).
Keep it ON until the adjustment of 4-2-31.
Spec.: Make sure that the data of the EVR "A010" is set to "184".
If it is not, set it to "184".

4-2-7. AGC (AUTO) Adjustment

Equipment: Oscilloscope
Test point: TP201/PR-142/P board
Adj. point: EVR "A009"
Preparation: Set "3" of the S406/FC-44/P board to ON. (AGC: ON)
Adjust the zoom control of the lens so that the gray scale chart frame matches the underscanned monitor frame.
Spec.: 200 mV



Note: Keep "3" of the S406 ON until the adjustment of 4-2-19.

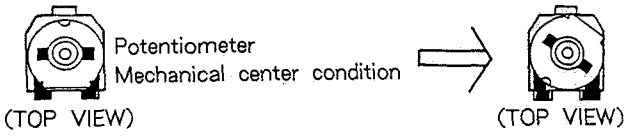
4-2-8. AGC (0 dB) Check

Adj. point: EVR "A011"
Spec.: Make sure that the data of EVR "A011" is set to "000".
If it is not, set it to "000".

4-2-9. Y1 GAIN Adjustment

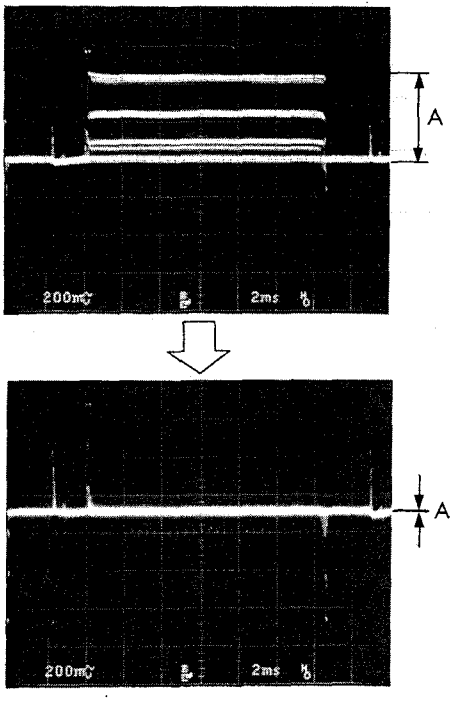
Equipment: Oscilloscope (HOLD OFF)
Test point: TP203/PR-142/P board
Adj. point: ⊘ RV202/PR-142/P board
Preparation:
Set conditions as follows.

1. Turn the ⊘ RV201/PR-142/P board counterclockwise to the utmost.



2. Set the data of EVR "A007" to "000".
3. Set the data of EVR "A008" to "000".
4. Adjust the zoom control of the lens so that the color bar chart frame matches the underscanned monitor frame.

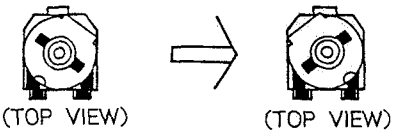
Spec.: A=0



4-2-10. Y2 GAIN Adjustment

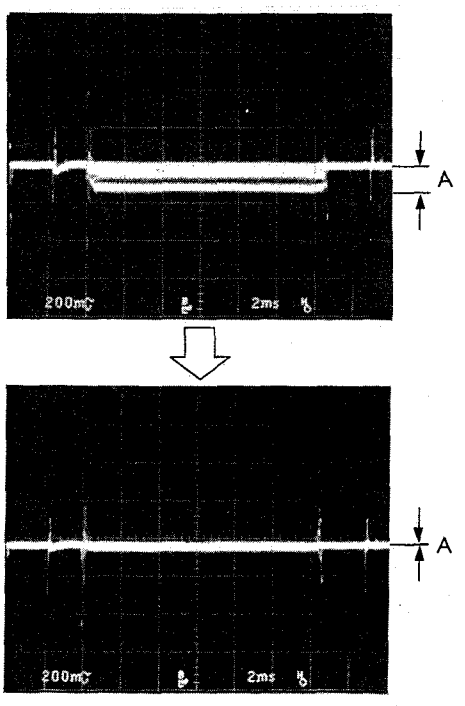
Equipment: Oscilloscope (HOLD OFF)
Test point: TP203/PR-142/P board
Adj. point: ⊘ RV201/PR-142/P board
Preparation:
Set conditions as follows.

1. Turn the ⊘ RV201/PR-142/P board clockwise to the utmost.



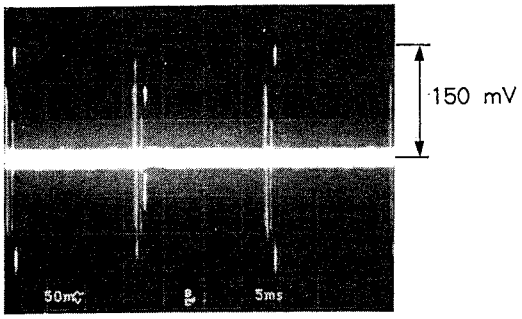
2. Make sure that the data of EVR "A007" is set to "000".
3. Make sure that the data of EVR "A008" is set to "000".
4. Adjust the zoom control of the lens so that the color bar chart frame matches the underscanned monitor frame.

Spec.: A=0
(Turn the ⊘ RV201 counterclockwise little by little, and adjust to the first point where A value is 0.)



4-2-11. VAP SLICE Adjustment

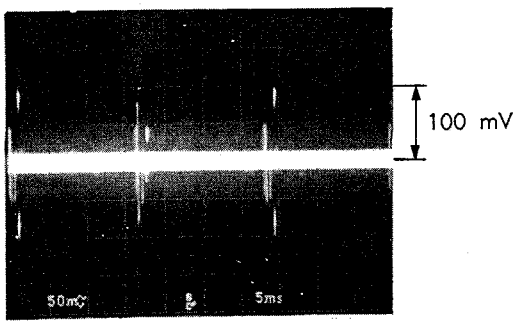
Equipment: Oscilloscope
Test point: TP203/PR-142/P board
Adj. point: EVR "A008"
Preparation: Make sure that the data of the EVR "A007" is set to "000" and take the whole white chart in the pattern box.



Spec.: Adjust the peak levels of spikes on the blanking to 150 mV.

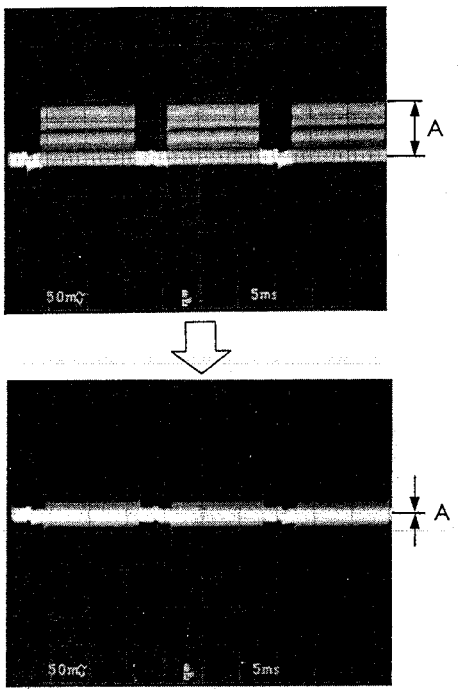
4-2-12. VAP GAIN Adjustment

Equipment: Oscilloscope
Test point: TP203/PR-142/P board
Adj. point: EVR "A007"
Preparation: Take the whole white chart in the pattern box.
Spec.: Adjust the peak levels of spikes on the blanking to 100 mV.



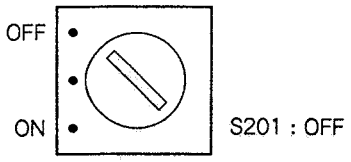
4-2-13. YH GAIN Adjustment

Equipment: Oscilloscope
Test point: TP204/PR-142/P board
Adj. point: ◐ RV205/PR-142/P board
Preparation: Adjust the zoom control of the lens so that the color bar chart frame matches the underscanned monitor frame.
Spec.: A=0



4-2-14. C1 GAIN Adjustment

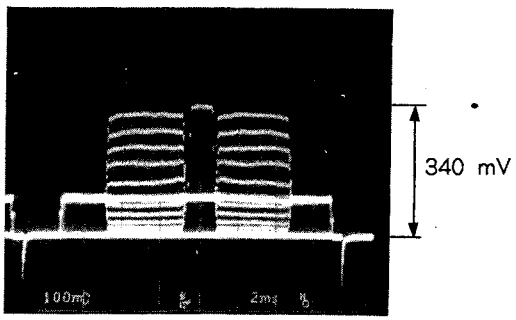
Equipment: Vectorscope
Test point: VIDEO OUT
Adj. point: ⊘ RV203/PR-142/P board
Preparation (NTSC only):
Set the S201/PR-142/P board to OFF. (Keep the S201 OFF until the BURST LEVEL adjustment of 4-2-21.)



Spec.: Make the bright spot one dot in a minimum size.

4-2-15. C Level Adjustment

Equipment: Oscilloscope
Test point: TP216/PR-142/P board
Adj. point: ⊘ RV204/PR-142/P board
Preparation: Adjust the zoom control of the lens so that the gray scale chart frame matches the underscanned monitor frame.
Spec.: 340 mV

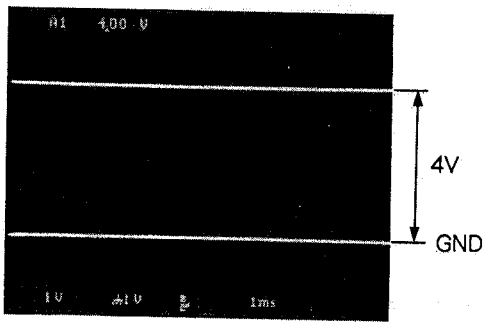


4-2-16. R GAIN Adjustment

Equipment: Oscilloscope or Vectorscope
Test point: TP219/PR-142/P board
Adj. point: EVR "A018"
⊘ RV206/PR-142/P board
Preparation: Set "1" of the S406/FC-44 board to ON, and set "2" to OFF.

Adjust:

1. Adjust the EVR "A018" so that the voltage of the TP219 (R CONT) is 4V (0 dB) on the oscilloscope screen.

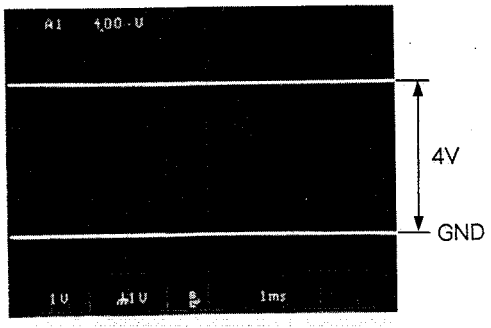


2. While taking the whole white pattern of 3200K, adjust the RV206 so that the bright spot is on the X axis on the vectorscope screen.

4-2-17. B GAIN Adjustment

Equipment: Oscilloscope or Vectorscope
Test point: TP218/PR-142/P board
Adj. point: EVR "A019"
⊘ RV206, 207/PR-142/P board
Preparation: Same as 4-2-16. R GAIN Adjustment.
Adjust:

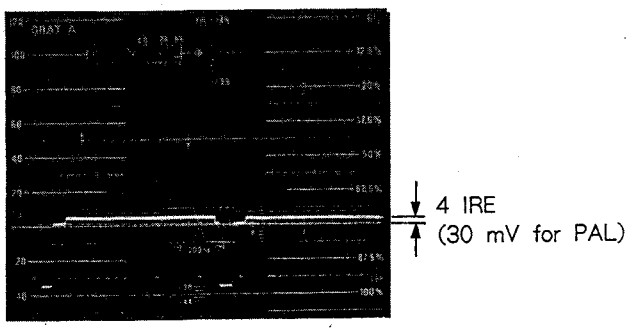
1. Adjust the EVR "A019" so that the voltage of the TP218 (B CONT) is 4V (0 dB) on the oscilloscope screen.



2. While taking the whole white pattern of 3200K, adjust the RV207 so that the bright spot is at the center of the vectorscope screen. (MAX GAIN) Also, re-adjust the Y axis by the RV206.

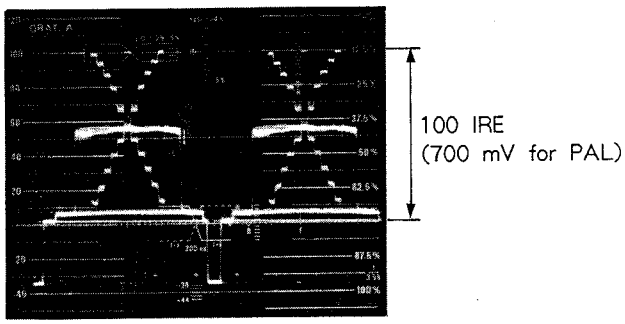
4-2-18. SETUP Level Adjustment

Equipment: Waveform monitor
Test point: VIDEO OUT
Adj. point: ⊘ RV213/PR-142/P board
Preparation: Take the black frame of the color bar chart or put the cover over the lens.
Spec.: Adjust the black level to 4 IRE (30 mV for PAL).



4-2-19. Y Level Adjustment

Equipment: Waveform monitor
Test point: VIDEO OUT
Adj. point: ⊘ RV214/PR-142/P board
Preparation: Adjust the zoom control of the lens so that the gray scale chart frame matches the underscanned monitor frame.
Spec.: Adjust the white level to 100 IRE (700 mV for PAL).



4-2-20. Color Reproduction Adjustment

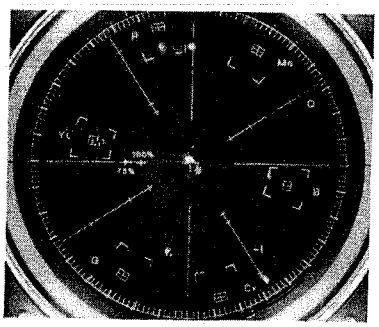
Equipment: Vectorscope
Test point: VIDEO OUT
Adj. point:
- RV208/PR-142/P board
- RV209/PR-142/P board
- RV210/PR-142/P board
- RV211/PR-142/P board

Preparation: Set "3" of the S406/FC-44/P board to OFF. (AGC: OFF)
Adjust the zoom control of the lens so that the color bar chart frame matches the underscanned monitor frame.
Adjust the lens iris and make the white level 100 IRE (700 mV for PAL).

Adjust:
Adjust the RVs so that each bright spot is within the specified vector scale respectively in the following order.
Adjust the red dot and yellow dot to the right center of each specified vector scale.

- RV208 (R-Y GAIN)
- RV209 (B-Y GAIN)
- RV211 (R-Y HUE)
- RV210 (B-Y HUE)

When the above adjustment is finish, the waveform is as below.

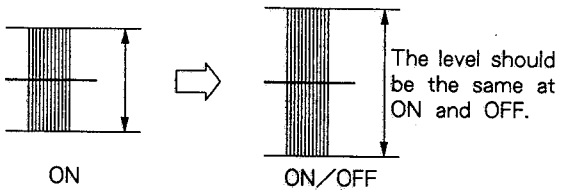


4-2-21. Burst Level Adjustment

Equipment: Vectorscope
Test point: VIDEO OUT
Adj. point: RV212/PR-142/P board
Spec.: Adjust the bright spot to the GAIN point (75%) on the vectorscope screen.

4-2-22. Chroma 1H Level Adjustment

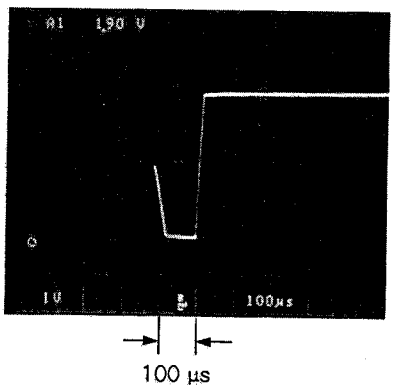
Equipment: Waveform monitor (VOLTS FULL SCALE: 0.5)
Test point: VIDEO OUT
Adj. point: RV215/PR-142/P board
Spec.: Adjust the RV215 so that the ON burst level and the OFF burst level of the S201/PR-142/P board are the same.



Note: Set the S201 to ON after the adjustment.

4-2-23. Electronic Shutter Adjustment

Equipment: Oscilloscope
Test point: TP402/FC-44/P board
Adj. point: EVR "A001"
Preparation: Set the S405/FC-44/P board to "6".
Spec.: Adjust the EVR "A001" so that the pulse length is 100 µs ± 15 µs. If the pulse is too small to perceive, make the value of the EVR data larger.

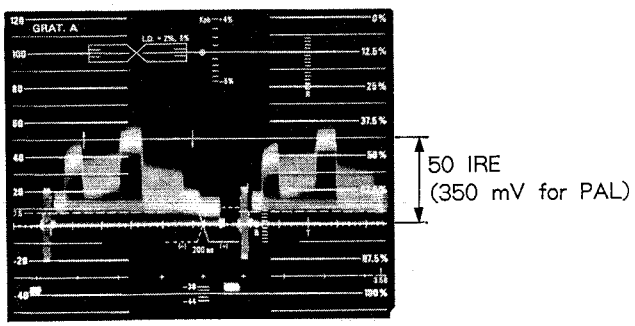


4-2-24. MAX GAIN Adjustment

Equipment: Waveform monitor
Test point: VIDEO OUT
Adj. point: EVR "A010"
Preparation:

1. Set the S405/FC-44/P board to "0", and set "3" of the S406/FC-44/P board (AGC: ON) to ON.
2. With the open lens iris and the ND256 filter (Kenko • glass ND: ND8+ND8+ND4) installed, adjust the zoom control of the lens so that the color bar chart frame matches the underscanned monitor frame.

Spec.: Adjust the EVR "A010" so that the white level is 50 IRE (350 mV for PAL).



4-2-25. WB R/B Offset Adjustment

Equipment: Vectorscope (GAIN: MAX)
Test point: VIDEO OUT
Adj. point: EVR "A003"
EVR "A004"
Preparation:

1. Set the S405/FC-44/P board to "0".
2. Set the S406/FC-44/P board as follows. (Set the WB mode to ATW, and the AGC to OFF.)
   S406 1...ON
   2...ON
   3...OFF
3. Set the lens iris to F8, and adjust the zoom control of the lens so that the white window chart frame matches the underscanned monitor frame.

Adjust:

1. Adjust the EVR "A003" so that the Y axis of the white signal spot is on the center.
2. Adjust the EVR "A004" so that the X axis of the white signal spot is on the center.
   If there is any divergence in the Y axis, re-adjust the EVR "A003".

4-2-26. Indoor WB Adjustment

Equipment: Vectorscope (GAIN: MAX)
Test point: VIDEO OUT
Adj. point: EVR "A018"
EVR "A019"
Preparation:

1. Set the S406/FC-44/P board as follows. (Set the WB mode to INDOOR and AGC to OFF.)
   S406 1...ON
   2...OFF
   3...OFF
2. Set the lens iris to F8, and take the whole white pattern of 3200K.

Spec.: Make sure that the white signal spot is at the center, and if there is any divergence, adjust it with the EVR "A018" and "A019".

4-2-27. Electronic Iris Adjustment

Equipment: Waveform monitor
Test point: VIDEO OUT
Adj. point: EVR "A002"
Preparation:

1. Set the S406/FC-44/P board in the same manner as 4-2-26. Indoor WB Adjustment.
2. Set the S405/FC-44/P board to "8".
3. With the open lens iris, adjust the zoom control of the lens so that the gray scale chart frame matches the underscanned monitor frame.

Spec.: Adjust the EVR "A002" so that the white level is 100 IRE (700 mV for PAL).

4-2-28. ATW Setting of ATW Hysteresis Data

Adj. point: EVR "A014"
Spec.: Set the data of the EVR "A014" to "002",

4-2-29. Setting of Electronic Iris Hysteresis Data

Adj. point: EVR "A015"
Spec.: Set the data of the EVR "A015" to "024".

4-2-30. Indoor WB Adjustment

Equipment: Vectorscope (GAIN: MAX)
Test point: VIDEO OUT
Adj. point: EVR "A020"
EVR "A021"

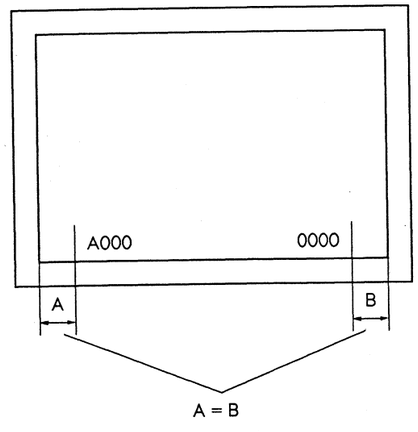
Preparation:
1. Set the S405/FC-44/P board to "0".
2. Set the S406/FC-44/P board as follows. (Set the WB mode to OUTDOOR and AGC to OFF.)
   S406 1...OFF
   2...ON
   3...OFF
3. Set the lens iris to F8 and install the color temperature conversion filter (C14 filter), then take the whole white pattern of 3200K.

Spec.: Set the white signal spot to the center.

4-2-31. Character Generator Oscillation Frequency Adjustment

Equipment: Color monitor
Test point: VIDEO OUT
Adj. point: ◐ CT401/FC-44/P board
Preparation: Make sure that the S401, S402, S403 and S404/FC-44/P board are set to "0". (Camera number "0000") If they are not, set them to "0". Make sure that the EVR adjustment fixture is set to the adjustment mode. (The address is appeared.)

Spec.: Seeing the color monitor, adjust the A value and B value in the picture below to be the same.

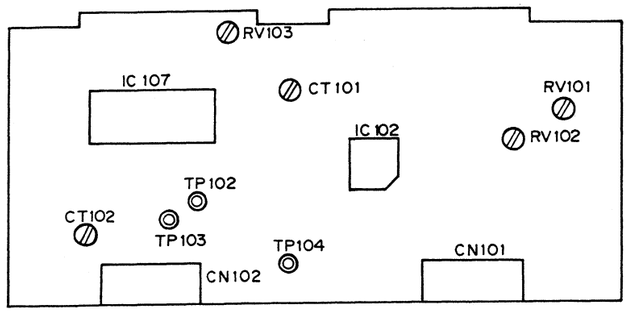


4-2-32. AWB Operation Check

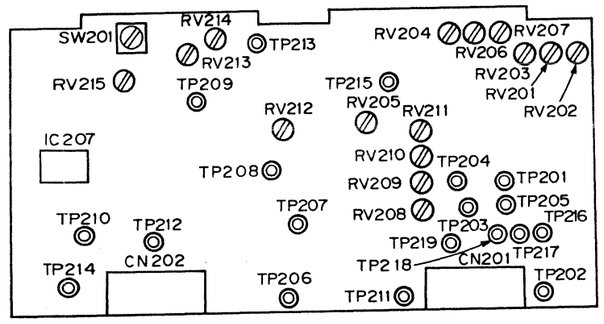
Equipment: Vectorscope (GAIN: MAX)
Test point: VIDEO OUT
Preparation:
1. Set the EVR adjustment mode (MODE ADJ) to OFF.
2. Set the S406/FC-44/P board as follows. (Set the WB mode to AWB and AGC to OFF.)
   S406 1...OFF
   2...OFF
   3...OFF
3. Set the lens iris to F8 and take the whole white pattern of 3200K.

Spec.:
1. Attach the color temperature conversion filter (C14 filter) to the lens, and press the S407/FC-44/P board to check that the bright spot comes to the center.
2. Remove the color temperature conversion filter (C14 filter) from the lens, and press the S407 again to check that the bright spot comes to the center.

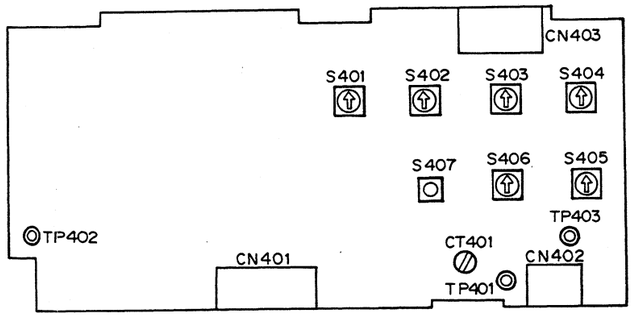
TG-70/P board



PR-142/P board

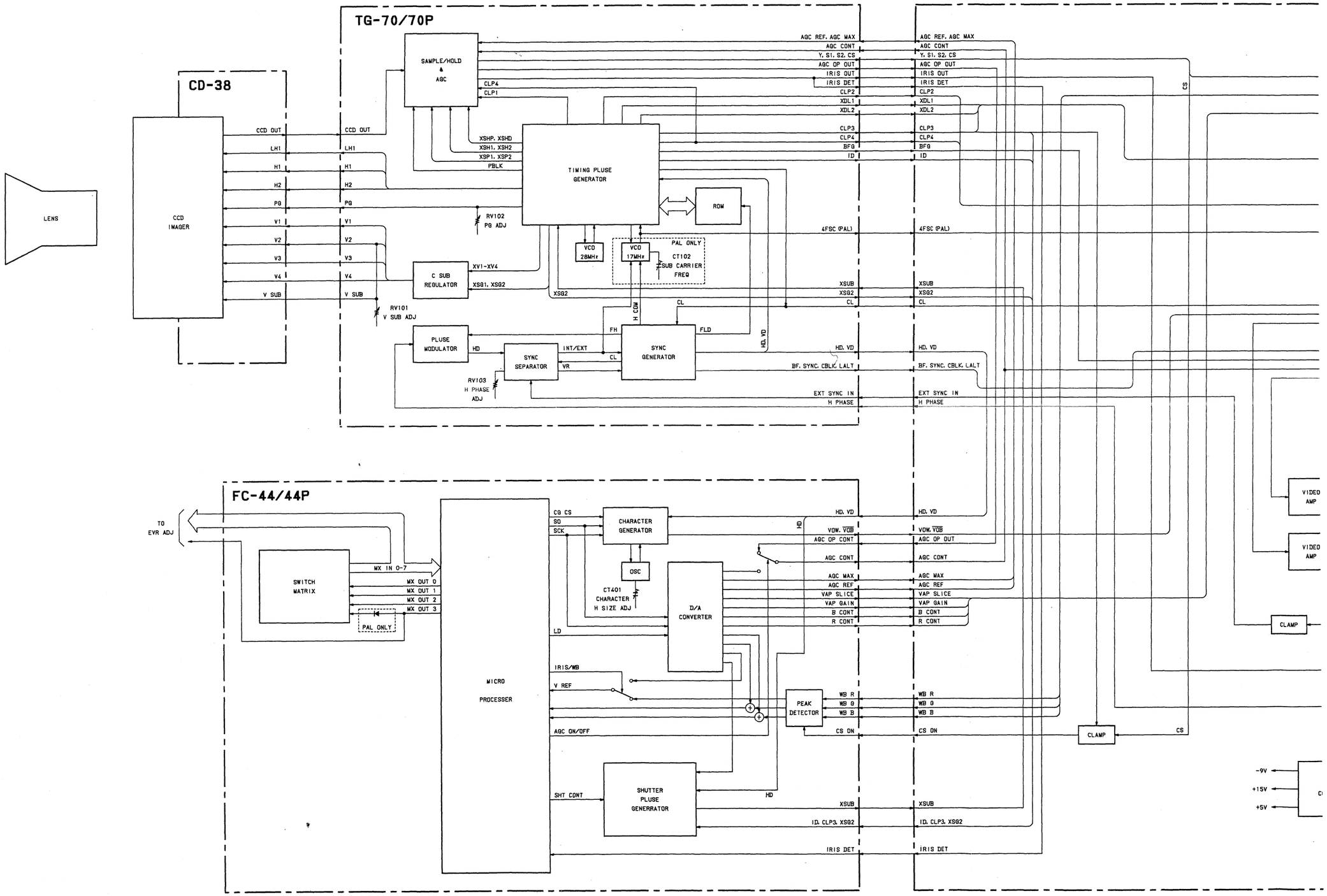


FC-44/P board

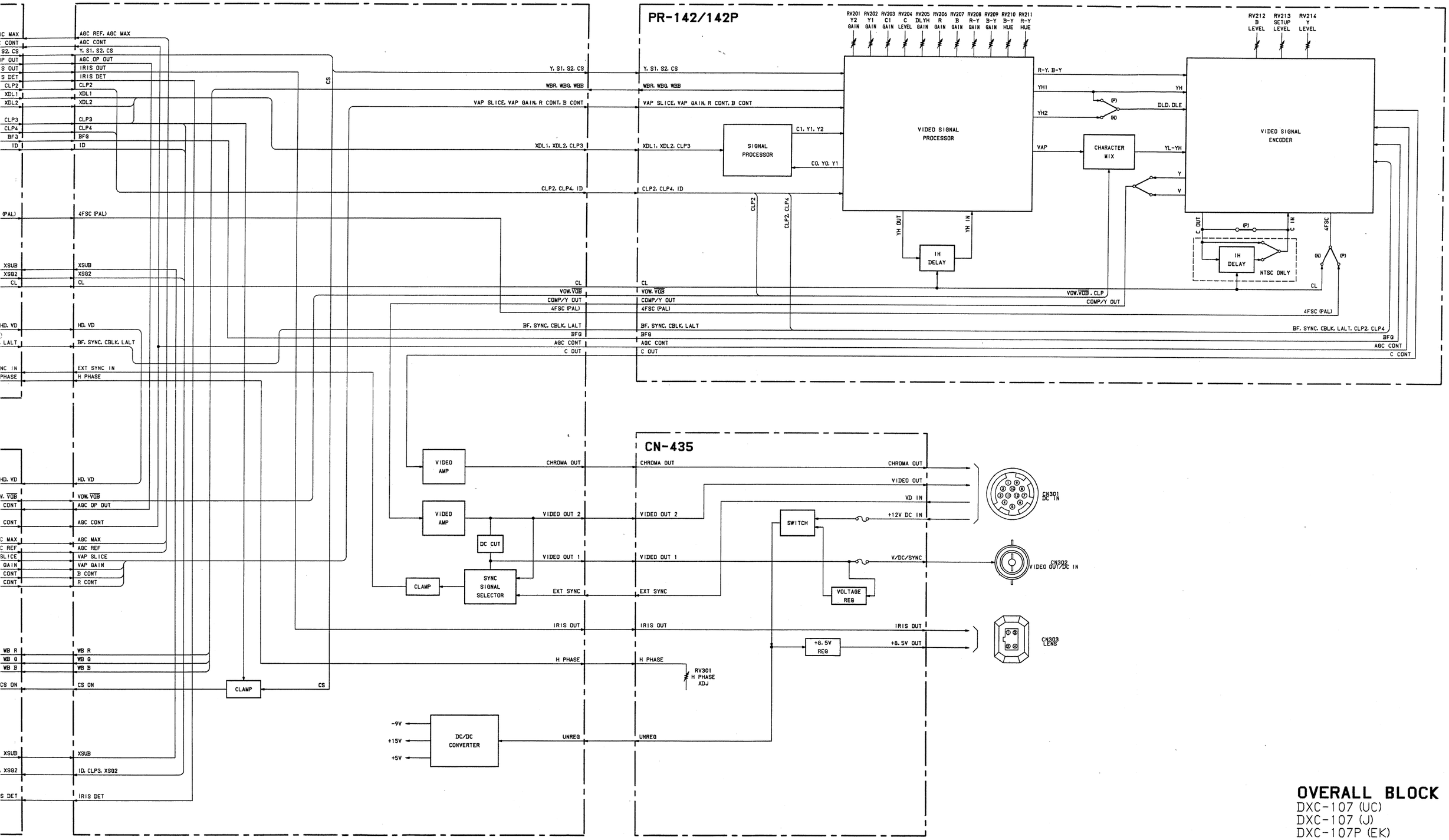


SECTION A
BLOCK DIAGRAMS

OVERALL BLOCK



OVERALL OVERALL



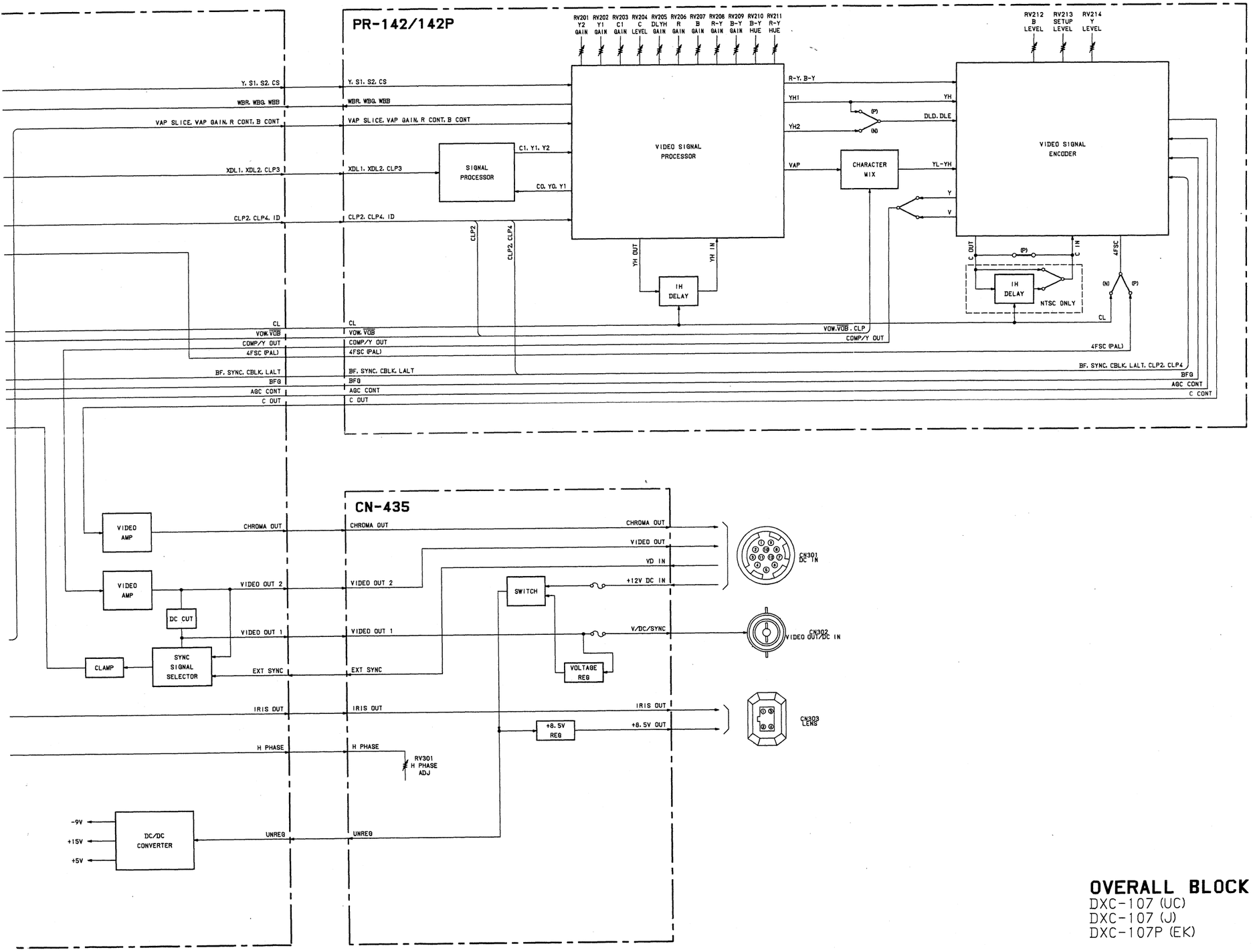
OVERALL BLOCK

DXC-107 (UC)
DXC-107 (J)
DXC-107P (EK)

A-2 A-3 A-4

G H I J K L M N

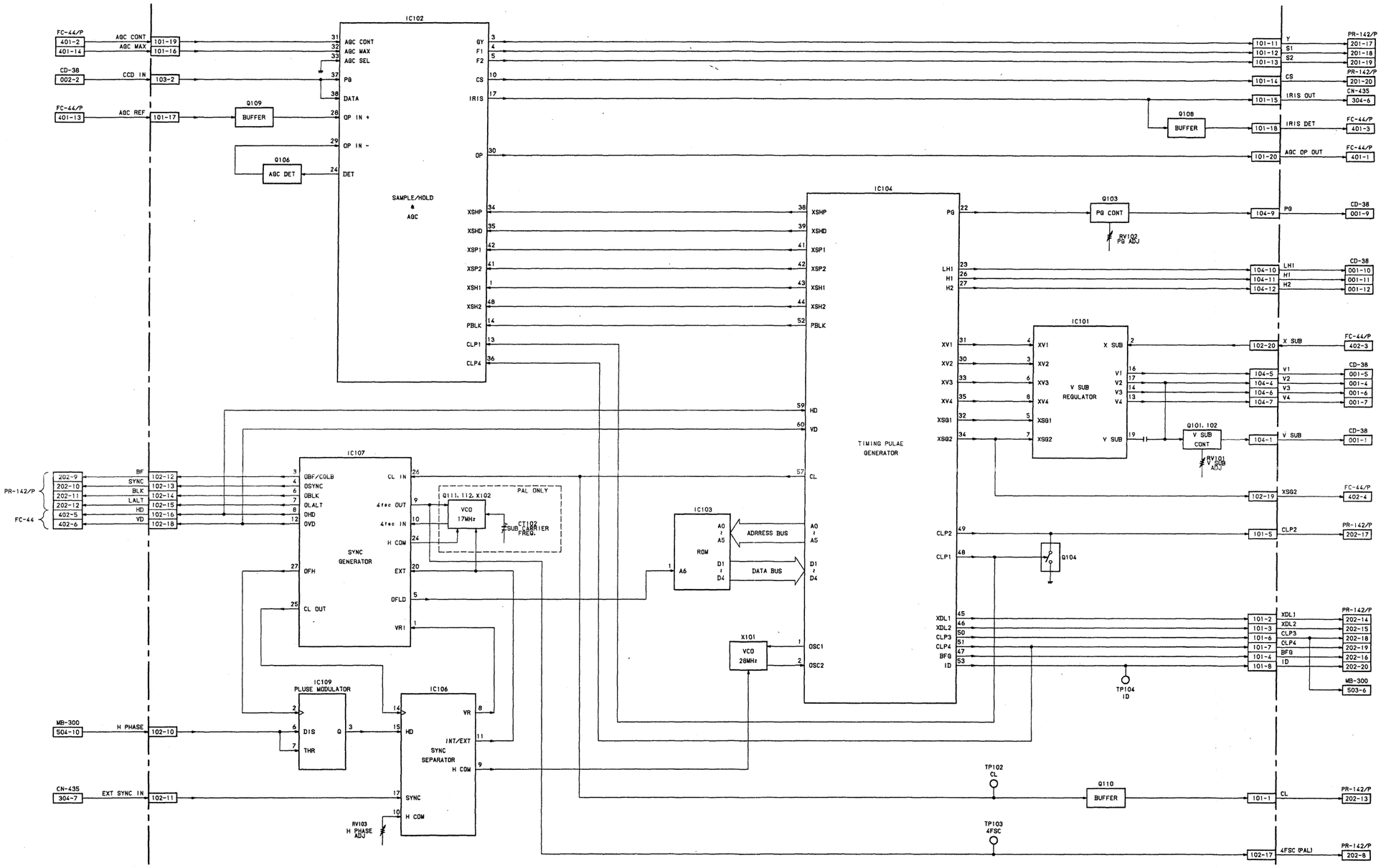
OVERALL OVERALL



OVERALL BLOCK

DXC-107 (UC)
DXC-107 (J)
DXC-107P (EK)

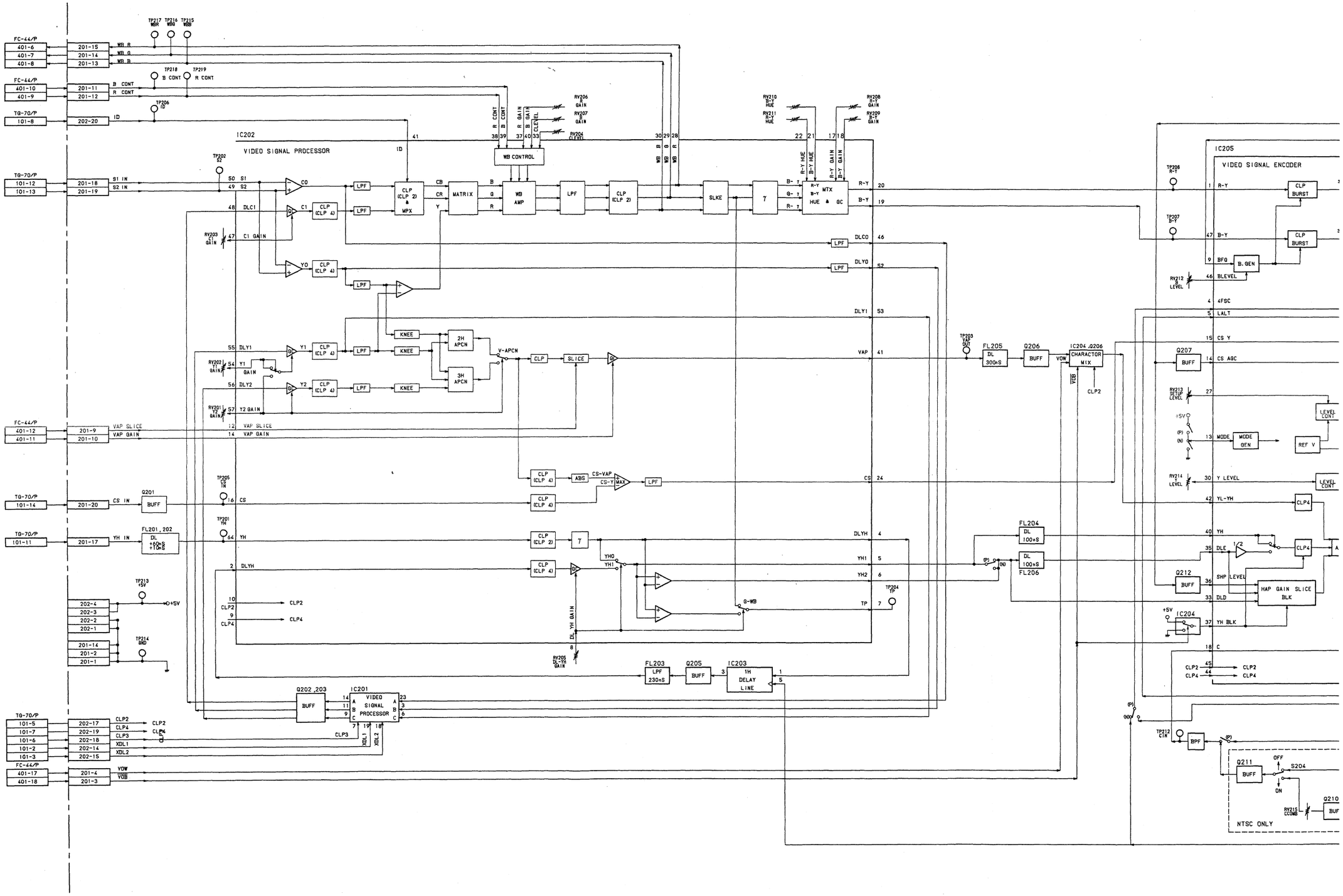
TG-70/70P BLOCK



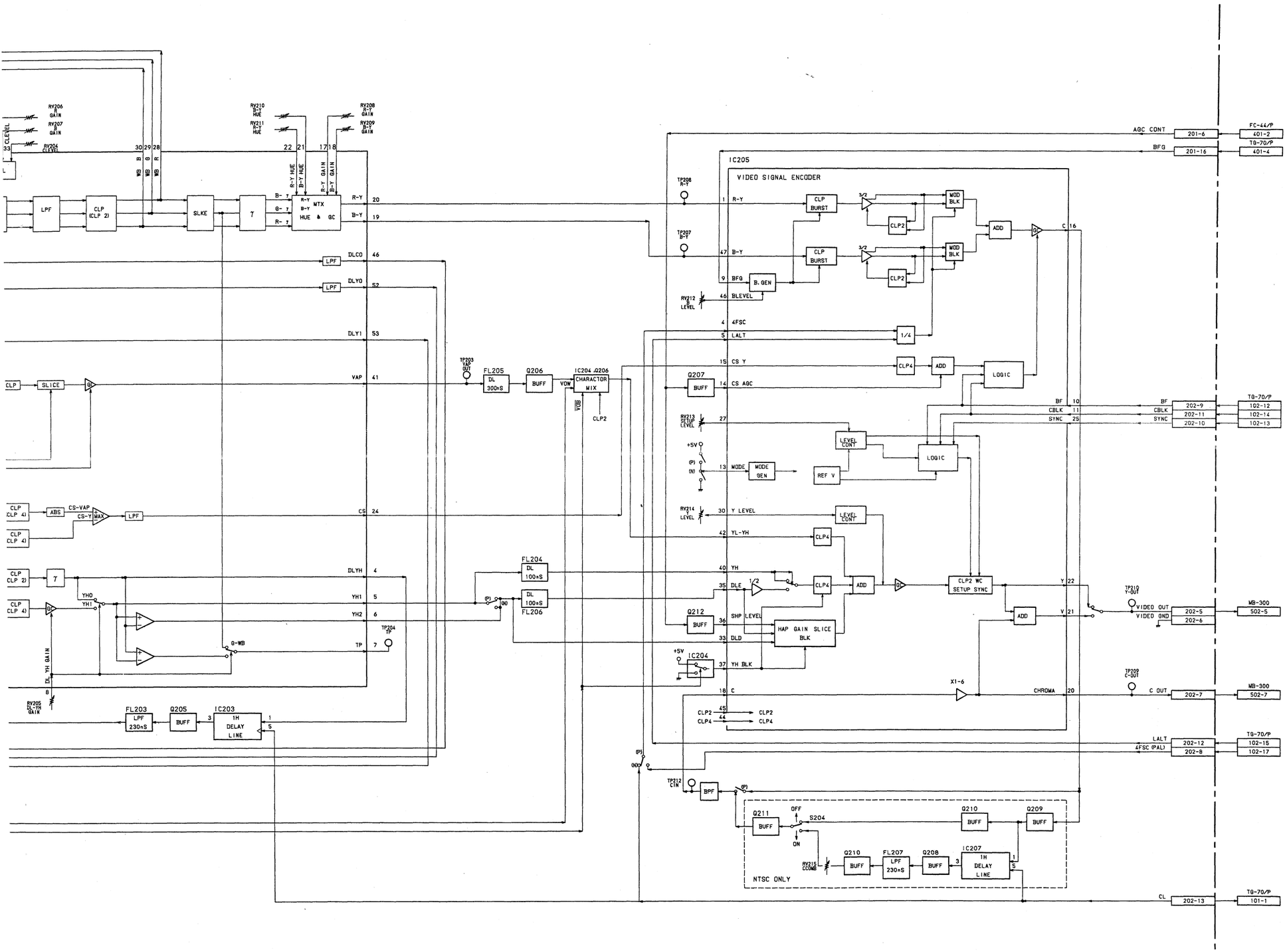
TG-70 BLOCK
TG-70P BLOCK
DXC-107 (UC)
DXC-107 (J)
DXC-107P (EK)

A-5, 6

PR-142/142P BLOCK



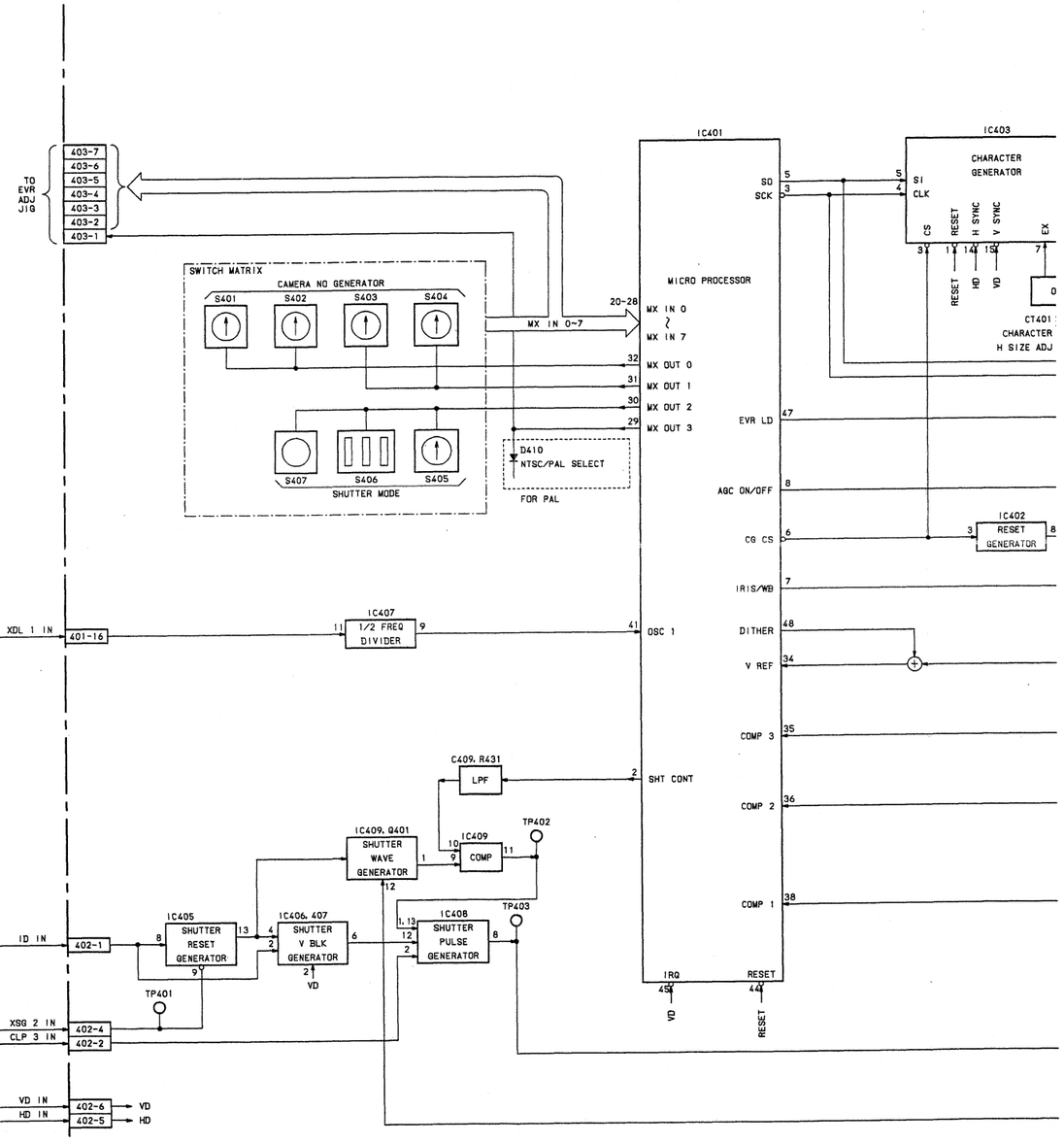
PR-142/142P



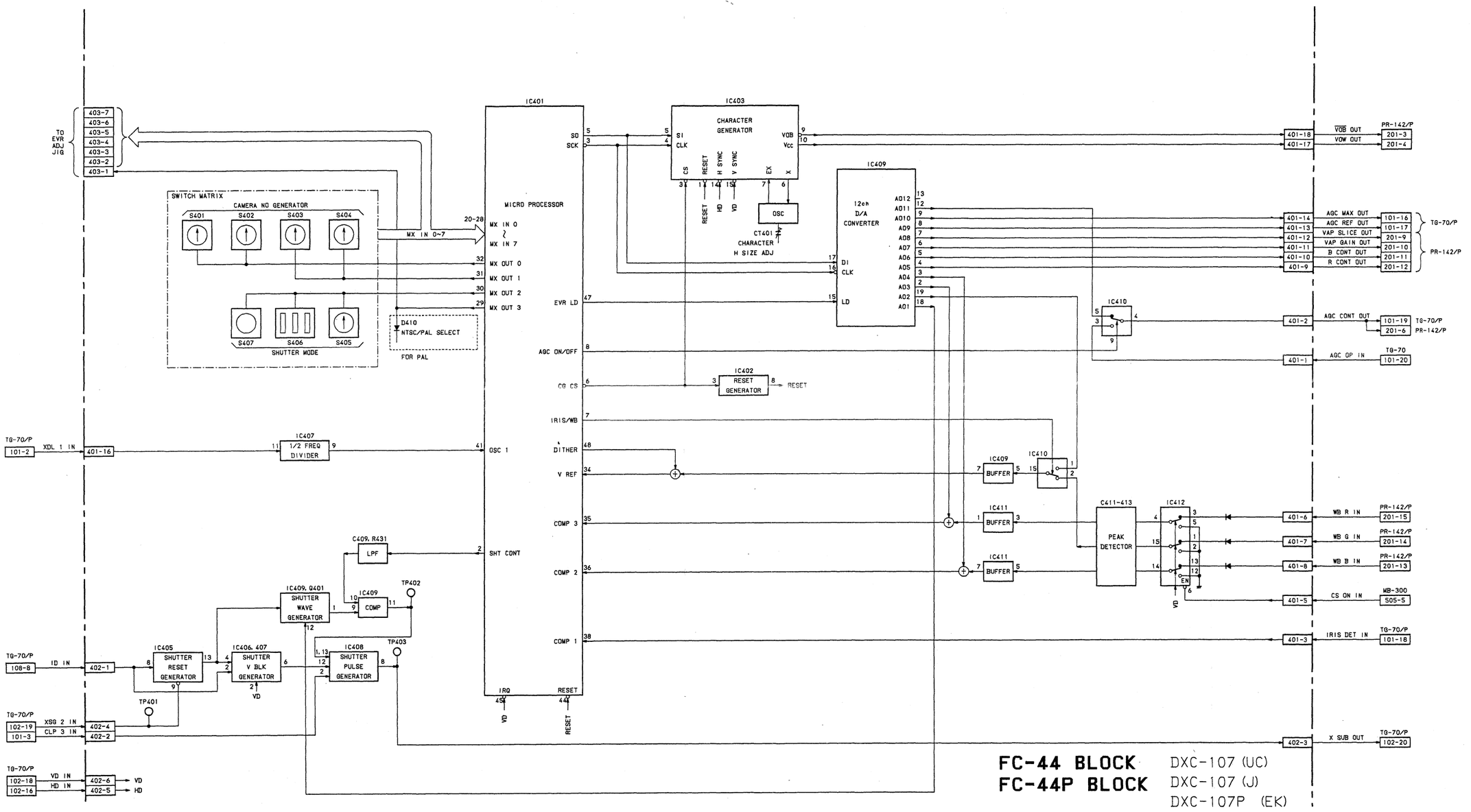
PR-142 BLOCK
PR-142P BLOCK
DXC-107 (UC)
DXC-107 (J)
DXC-107P (EK)

A-10 A-11

FC-44/44P BLOCK



FC-44/44P BLOCK



FC-44 BLOCK DXC-107 (UC)
FC-44P BLOCK DXC-107 (J)
DXC-107P (EK)

SECTION B
SEMICONDUCTOR

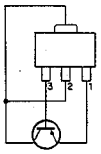
The circuit diagram of IC is obtained from the IC data book published by the manufacturer.

TYPE	PAGE
1T32A	B-2
1T33C	B-2
2SA1576	B-2
2SB804	B-2
2SC4081	B-2
2SD1005	B-2
2SD1406	B-2
2SK300	B-2
CXA1390R	B-3
CXA1391R	B-4
CXA1392R	B-5
CXD1216M	B-6
CXD1217M	B-6
CXD1250M	B-8
CXD1252AR	B-8
CXL1507N	B-9
CXL5504M	B-10
D1FS4	B-2
ICX038AN-1	B-10
ICX039AN-1	B-10
MA110	B-2
MA111	B-2
MA121	B-2
MA141WA	B-2
MA143	B-2
MB3773PF	B-10
MB88313PF	B-10
MB88341PFV	B-12
MC14577AF	B-12
MC68HC05N4	B-11
MC74HC164F	B-11
MC74HC4053F	B-11
RD ? ?M-B ?	B-2
SC7S00F	B-12
SN74HC00NS	B-11
SN74HC74NS	B-12
TL072CPS	B-12
UN5213	B-2
uPC324G2	B-12
uPC358G2	B-12
uPC393G2	B-12
uPD5555G	B-13
uPD74HC00G	B-11
uPD74HC74G	B-12
XN1401	B-2
XN1501	B-2
XN4401	B-2
XN4501	B-2
XN4601	B-2

DIODE, TRANSISTOR

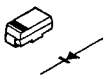
1T32A
1T33C

(SCALE 4/1)
TOP VIEW



2SB804

(Scale 2/1)

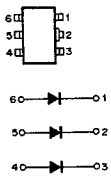


D1FS4

(SCALE 6/1)
TOP VIEW

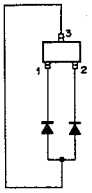
MA110
MA111

(SCALE 6/1)
TOP VIEW



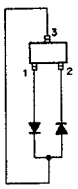
MA121

(SCALE 4/1)
TOP VIEW



MA141WA

(SCALE 4/1)
TOP VIEW

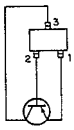


MA143

(SCALE 4/1)
TOP VIEW

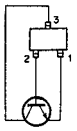
RD ? ?M-B ?

(SCALE 4/1)
TOP VIEW



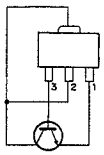
2SA1576

(SCALE 4/1)
TOP VIEW



2SC4081

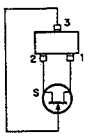
TOP VIEW (SCALE 4/1)



2SD1005

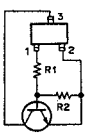
2SD1406

TOP VIEW (SCALE 4/1)



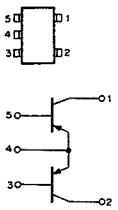
2SK300

(SCALE 4/1)
TOP VIEW



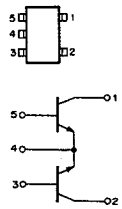
UN5213

(SCALE 6/1)
TOP VIEW



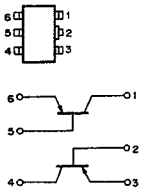
XN1401

(SCALE 6/1)
TOP VIEW



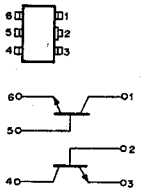
XN1501

(SCALE 6/1)
TOP VIEW



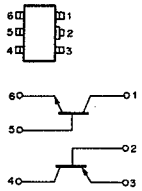
XN4401

(SCALE 6/1)
TOP VIEW



XN4501

(SCALE 6/1)
TOP VIEW

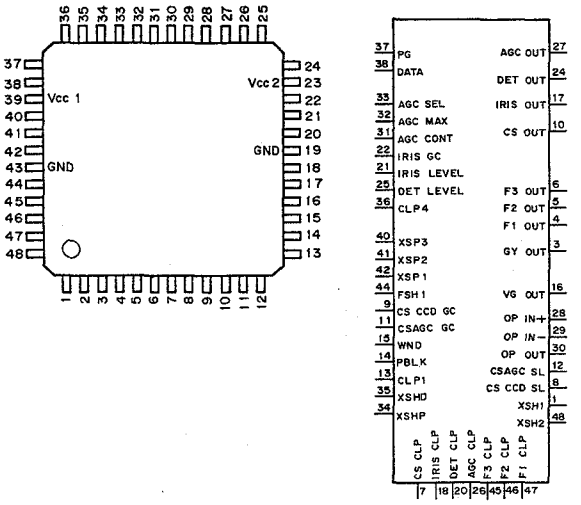


XN4601

CXA1390R (SONY)

C-MOS SAMPLE & HOLD AND AGC FOR CCD

– TOP VIEW –



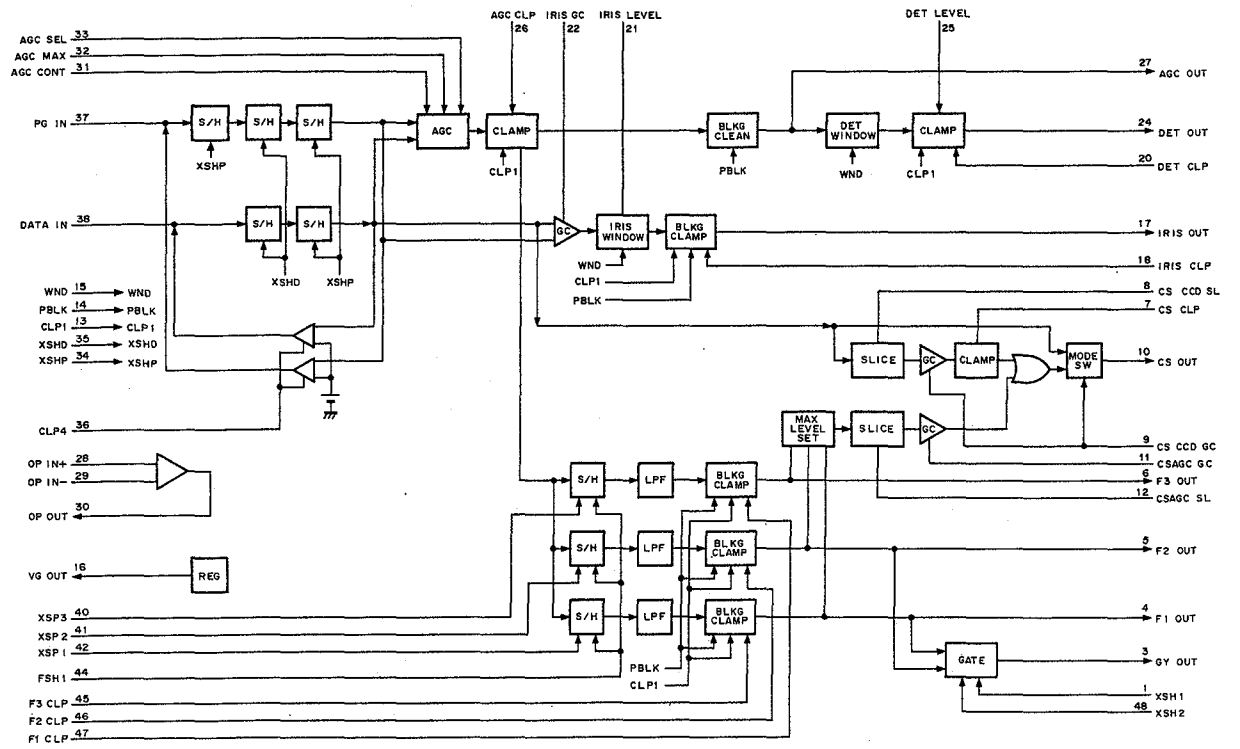
INPUT

XSH1, XSH2	; SAMPLE AND HOLD PULSE INPUTS FOR 1H DELAY LINE
XSHP, XSHD	; SAMPLE AND HOLD PULSE INPUTS FOR CCD IMAGER
XSP3, XSP2, XSP1	; SAMPLE AND HOLD PULSE INPUTS FOR COLOR SEPARATION
CS CLP	; *CLAMP INPUT FOR COLOR SEPARATION*
IRIS CLP	; CLAMP INPUT FOR IRIS CONT
DET CLP	; CLAMP INPUT FOR SIGNAL DETECT
AGC CLP	; CLAMP INPUT FOR AGC
F3/F2/F1 CLP	; CLAMP INPUTS FOR F1, F2 AND F3
CS CCD SL	; *HIGH LUMINANCE DET LEVEL ADJ FOR INPUT SIGNAL*
CS CCD GC	; HIGH LUMINANCE GAIN ADJ FOR INPUT SIGNAL
CSAGC GC	; HIGH LUMINANCE DET LEVEL ADJ FOR AFTER AGC
CSAGC SL	; HIGH LUMINANCE DET LEVEL ADJ FOR INPUT SIGNAL
IRIS LEVEL	; WEIGHT ADJ INPUT FOR DET OUTPUT
IRIS GC	; *GAIN CONT INPUT FOR IRIS OUT*
DET LEVEL	; WEIGHT ADJ INPUT FOR DET OUTPUT
AGC CONT	; AGC AMPLIFIER GAIN CONT INPUT
AGC MAX	; AGC AMPLIFIER MAX GAIN CONT INPUT
CLP1	; CLAMP PULSE 1 INPUT
PBLK	; *PRE BLKG PULSE INPUT*
WND	; WINDOW PULSE INPUT
CLP4	; CLAMP PULSE 4 INPUT
OP IN +	; NON-INVERTING INPUT OF OPERATIONAL AMPLIFIER
OP IN –	; INVERTING INPUT OF OPERATIONAL AMPLIFIER
AGC SEL	; *GAIN SELECT FOR AGC AMPLIFIER*
PG IN	; CCD SIGNAL INPUT
DATA IN	; CCD SIGNAL INPUT
FSHI	; LOCK SPEED ADJ INPUT FOR COLOR SEPARATION S/H

OUTPUT

GY OUT	; GY OUTPUT
F1, F2, F3 OUT	; F1, F2 AND F3 OUTPUTS
AGC OUT	; AGC OUTPUT
CS OUT	; COLOR SEPARATION OUTPUT
IRIS OUT	; *IRIS OUTPUT*
DET OUT	; DET OUTPUT
VG OUT	; REGULATED DC OUTPUT
OP OUT	; OPERATIONAL AMPLIFIER OUTPUT

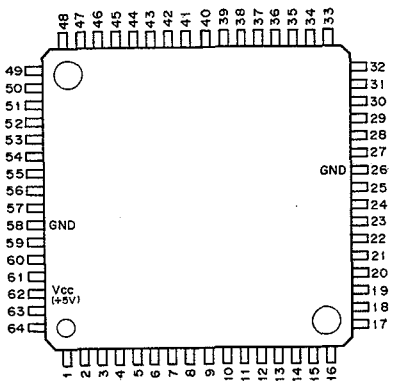
PIN No.	I/O	SYMBOL	PIN No.	I/O	SYMBOL	PIN No.	I/O	SYMBOL	PIN No.	I/O	SYMBOL
1	I	XSH1	13	I	CLP 1	25	I	DET LEVEL	37	I	PG IN
2	O	DC OUT	14	I	PBLK	26	I	AGC CLP	38	I	DATA IN
3	O	GY OUT	15	I	WND	27	O	AGC OUT	39	–	Vcc1
4	O	F1 OUT	16	O	VG OUT	28	I	OP IN +	40	I	XSP3
5	O	F2 OUT	17	O	IRIS OUT	29	I	OP IN –	41	I	XSP2
6	O	F3 OUT	18	I	IRIS CLP	30	O	OP OUT	42	I	XSP1
7	I	CS CLP	19	–	GND	31	I	AGC CONT	43	–	GND
8	I	CS CCD SL	20	I	DET CLP	32	I	AGC MAX	44	I	FSH1
9	I	CS CCD GC	21	I	IRIS LEVEL	33	I	AGC SEL	45	I	F3 CLP
10	O	CS OUT	22	I	IRIS GC	34	I	XSHP	46	I	F2 CLP
11	I	CS AGC GC	23	–	Vcc2	35	I	XSHD	47	I	F1 CLP
12	I	CS AGC SL	24	O	DET OUT	36	I	CLP4	48	I	XSH2

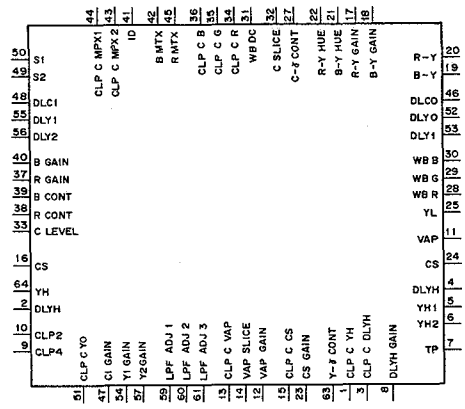


CXA1391R (SONY) FLAT PACKAGE

PROCESSING IC FOR COMPLEMENTARY COLOR MOSAIC CCD CAMERA

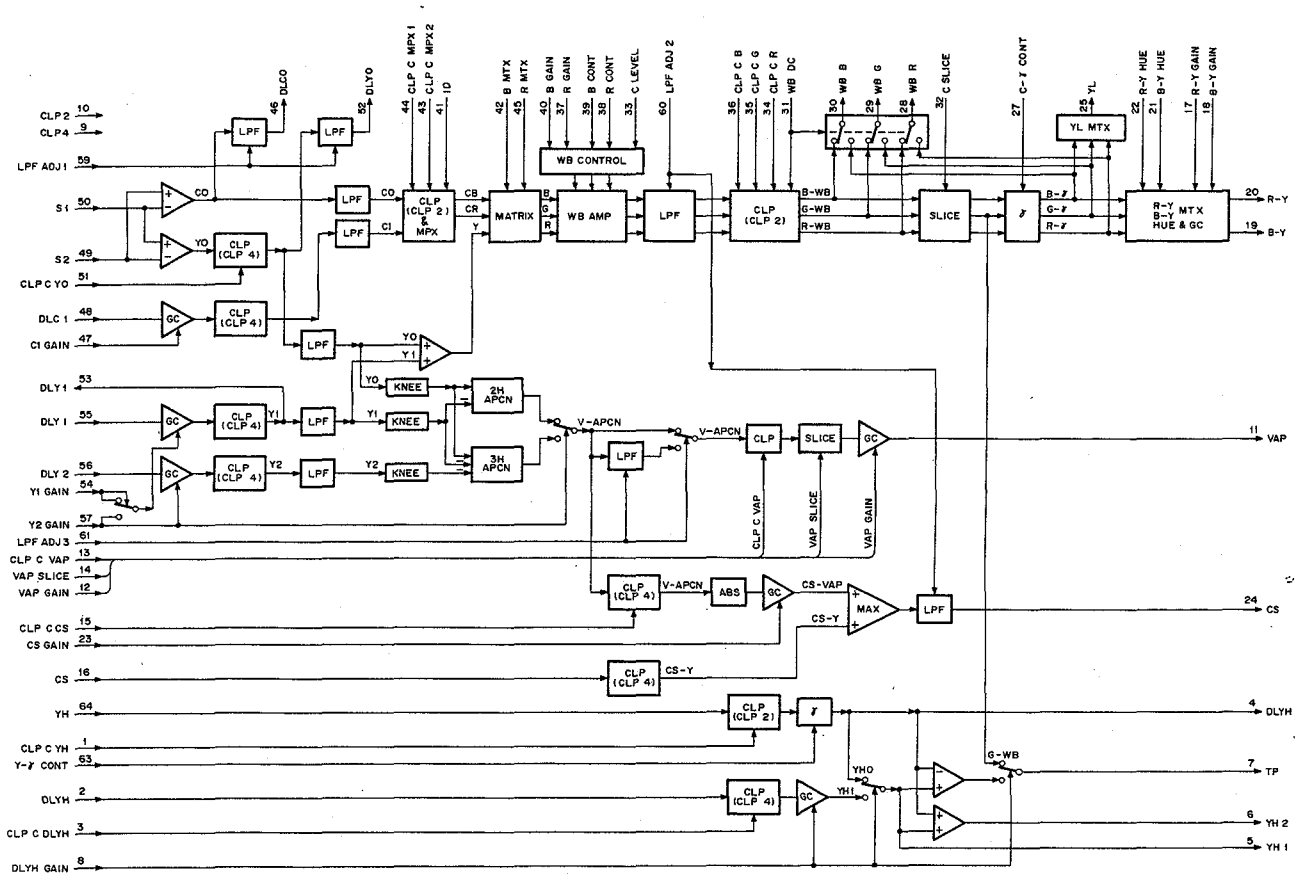
– TOP VIEW –





(V_{CC} = +5V)

PIN No.	I/O	SYMBOL	PIN No.	I/O	SYMBOL	PIN No.	I/O	SYMBOL	PIN No.	I/O	SYMBOL
1	I	CLP C YH	17	I	R-Y GAIN	33	I	C LEVEL	49	I	S2
2	I	DLYH	18	I	B-Y GAIN	34	I	CLP C R	50	I	S1
3	I	CLP C DLYH	19	O	B-Y	35	I	CLP C G	51	I	CLP C YO
4	O	DLYH	20	O	R-Y	36	I	CLP C B	52	O	DLYO
5	O	YH1	21	I	B-Y HUE	37	I	R GAIN	53	O	DLY1
6	O	YH2	22	I	R-Y HUE	38	I	R CONT	54	I	Y1 GAIN
7	O	TP	23	I	CS GAIN	39	I	B CONT	55	I	DLY1
8	I	DLYH GAIN	24	O	CS	40	I	B GAIN	56	I	DLY2
9	I	CLP4	25	O	YL	41	I	ID	57	I	Y2 GAIN
10	I	CLP2	26	–	GND	42	I	B MTX	58	–	GND
11	O	VAP	27	I	C-Y CONT	43	I	CLP C MPX2	59	I	LPF ADJ 1
12	I	VAP GAIN	28	O	WB R	44	I	CLP C MPX1	60	I	LPF ADJ 2
13	I	CLP C VAP	29	O	WB G	45	I	R MTX	61	I	LPF ADJ 3
14	I	VAP SLICE	30	O	WB B	46	O	DLCO	62	–	Vcc
15	I	CLP C CS	31	O	WB DC	47	I	C1 GAIN	63	I	Y-Y CONT
16	I	CS	32	I	C SLICE	48	I	DLC1	64	I	YH



INPUT

B, R CONT	; B, RCH WB AMPLIFIER GAIN CONTROL
B, R GAIN	; B, RCH WB AMPLIFIER GAIN CONTROL (PRE-WB)
B, R MTX	; B, R SIGNAL OPERATIONS MTX COEFFICIENT ADJ.
C LEVEL	; CHROMA (R.G.B) GAIN CONTROL
C SLICE	; CHROMA (R.G.B) SIGNALS DARK SLICE LEVEL ADJ.
C-γ CONT	; CHROMA (R.G.B) γ CURVE ADJ.
C1 GAIN	; DLC1 SIGNAL GAIN CONTROL
CLP C R.G.B	; CAPACITOR CONNECTING FOR R.G.B WB AMPLIFIER CLAMP
CLP C CS	; CAPACITOR CONNECTING FOR CS CLAMP
CLP C DLYH	; CAPACITOR CONNECTING FOR DLYH CLAMP
CLP C MPX1, 2	; CAPACITOR CONNECTING FOR MPX CLAMP
CLP C VAP	; CAPACITOR CONNECTING FOR VAP CLAMP
CLP C YO	; CAPACITOR CONNECTING FOR YO CLAMP
CLP C YH	; CAPACITOR CONNECTING FOR YH CLAMP
CLP2	; OPB CLAMP
CLP4	; BLK CLAMP
CS IN	; AGC CS SIGNAL
CS GAIN	; V-APCN CS SIGNAL GAIN CONTROL
DLC1, Y1, Y2	; DLC1, Y1, Y2 SIGNAL
DLYH	; DLYH SIGNAL
DLYH GAIN	; DLYH SIGNAL GAIN CONTROL
ID	; COLOR DISCRIMINATION PULSE
LPF ADJ 1	; DETERMINES THE CHARACTERISTICS OF THE LPF FOR 1H DL
LPF ADJ 2	; DETERMINES THE CHARACTERISTICS OF THE CHROMA LPF (R,G,B,CS)
LPF ADJ 3	; DETERMINES THE CHARACTERISTICS OF THE LPF FOR V-APCN
R-Y, B-Y GAIN	; R-Y, B-Y, SIGNAL OUTPUT LEVEL ADJ.
R-Y, B-Y HUE	; R-Y, B-Y HUE CONTROL
S1, 2	; S1, 2 SIGNAL
VAP GAIN	; V-APCN SIGNAL OUTPUT LEVEL ADJ.
VAP SLICE	; V-APCN SIGNAL DARK SLICE VOLUME ADJ.
Y-γ CONT	; YH γ CURVE ADJ.
Y1, 2 GAIN	; DLY1, 2 SIGNAL GAIN CONTROL
YH	; YH SIGNAL

OUTPUT

CS OUT	; CS SIGNAL
DLCO	; DLCO SIGNAL
DLCO, 1	; DLCO, 1 SIGNAL
DLYO,1	; DLYO, 1 SIGNAL
DLYH	; DLYH SIGNAL
R-Y, B-Y	; R-Y, B-Y SIGNAL
TP	; ADJUSTING PIN
VAP	; V-APCN SIGNAL
WB R.G.B	; R.G.B SIGNAL
WB DC	; AUTO WB DC OUTPUT OR WB R.G.B TURN TO γ MODE
YH1, 2	; YH1, 2 SIGNAL
YL	; YL SIGNAL

INPUT

4FSC	; 4FSC USED TO MAKE UP THE SUB CARRIER
B LEVEL	; CONTROLS THE BURST LEVEL
BF	; BURST FLAG PULSE
BFG	; INSERTS PULSE SLIGHT LARGER THAN BF ON BOTH ENDS
C	; INPUT FOR CHROMA SIGNAL PASSED THROUGH BPF
CBLK	; COMPOSITE BLANKING PULSE
CLP2, 4	; CLAMP2, 4 PULSE INPUT
CS AGC	; SUPPRESS CHROMA SIGNAL AT THE AGC GAIN CONTROL SIGNAL
CSY	; SUPPRESS CHROMA SIGNAL AT THE Y SIGNAL
CTBLK	; CHROMA TITLER PULSE
DLD	; CONNECTS THE DELAY LINE DRIVE SIDE OF THE APERTURE SIGNAL
DLE	; CONNECTS THE DELAY LINE END SIDE OF THE APERTURE SIGNAL
FADER MODE	; BLACK FADER AND WHITE FADER MODE SELECT
FADER SIG	; CONTROLS THE SIGNAL SUPPRESS LEVEL DURING BLACK FADER, CONTROLS THE SIGNAL SUPPRESS LEVEL DURING WHITE FADER AND AT THE SAME TIME CONTROLS THE SET UP LEVEL
LALT	; INPUT FOR LINE ALTERNATE SIGNAL DURING PAL MODE
MODE	; SELECTS NTSC, PAL OR NTSC × 2, PAL × 2 MODES
NOISE SLICE	; CONTROLS THE SLICE LEVEL OF THE APERTURE SIGNAL
R-Y, B-Y	; R-Y, B-Y SIGNAL
R-Y, B-Y CLP	; CONNECTING THE CAPACITOR FOR R-Y, B-Y MODULATOR CLAMP
SETUP CLP	; CONNECTING FOR THE WHITE CLIP CLAMP CAPACITOR
SETUP LEVEL	; SET UP LEVEL CONTROL
SHP CLP1, 2	; CONNECTS THE CLAMP CAPACITOR USED FOR THE SLICE OF THE APERTURE SIGNAL
SHP LEVEL	; CONTROL OF THE APERTURE SIGNAL LEVEL
SYNC	; SYNC PULSE
SYNC LEVEL	; SYNC LEVEL CONTROL
WC LEVEL	; WHITE CLIP LEVEL CONTROL
Y LEVEL	; Y SIGNAL LEVEL CONTROL
YH	; YH SIGNAL
YH CLP	; CONNECTS THE CAPACITOR FOR YH INPUT CLAMP
YL-YH	; V APERTURE SIGNALS, TITLER SIGNALS AND YL-YH SIGNALS
YL-YH CLP	; CONNECTS THE CAPACITOR FOR YL-YH INPUT CLAMP
YTBLK	; Y TITLER PULSE

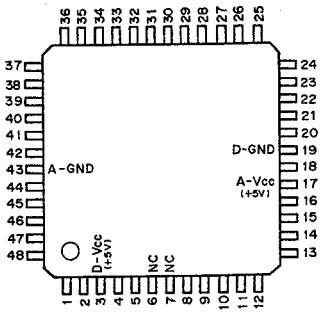
OUTPUT

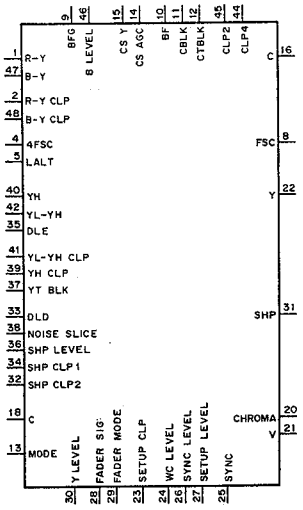
C	; CHROMA SIGNAL OUTPUT
CHROMA	; CHROMA SIGNAL OUTPUT WHEN USED FOR Y/C SEPARATION OUTPUT
FSC	; OUTPUTS A SUB CARRIER WITH THE SAME PHASE AS B-Y
SHP	; APERTURE SIGNAL
V	; COMPOSITE VIDEO SIGNAL
Y	; Y SIGNAL OUTPUT WHEN USED FOR Y/C SEPARATION OUTPUT

CXA1392R (SONY) FLAT PACKAGE

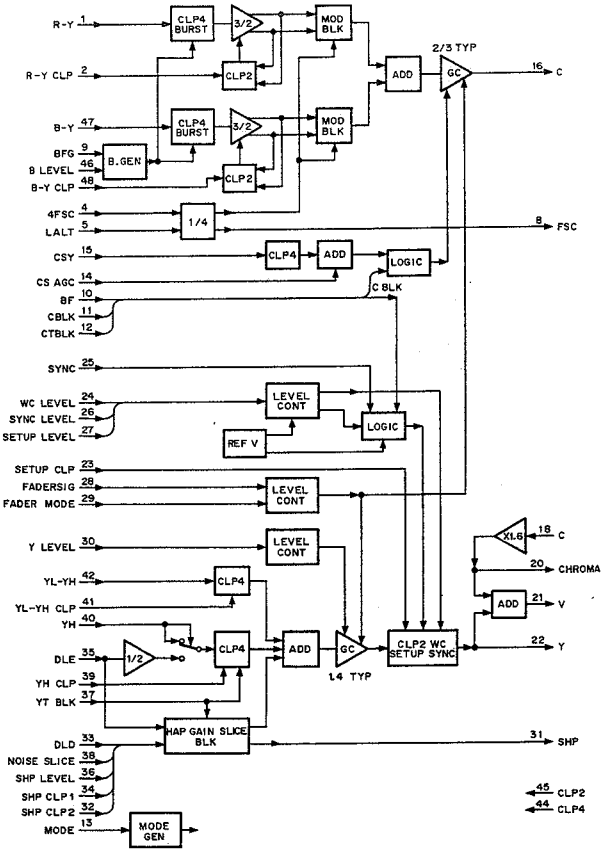
ENCODER FOR CCD COLOR CAMERA

– TOP VIEW –





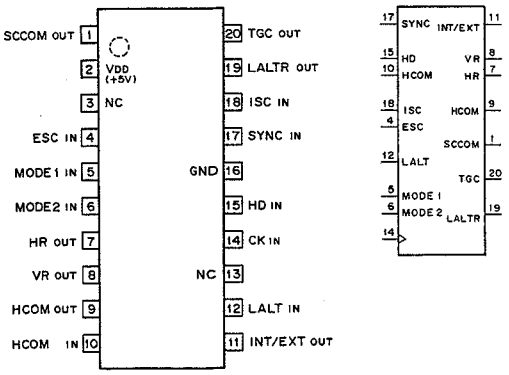
PIN No.	I/O	SYMBOL	PIN No.	I/O	SYMBOL	PIN No.	I/O	SYMBOL	PIN No.	I/O	SYMBOL
1	I	R-Y	13	I	MODE	25	I	SYNC	37	I	YTBLK
2	I	R-Y CLP	14	I	CS AGC	26	I	SYNC LEVEL	38	I	NOISE SLICE
3	–	D-Vcc(+5V)	15	I	CSY	27	I	SETUP LEVEL	39	I	YH CLP
4	I	4FSC	16	O	C	28	I	FADER SIG	40	I	YH
5	I	LALT	17	–	A-Vcc(+5V)	29	I	FADER MODE	41	I	YL-YH CLP
6	–	NC	18	I	C	30	I	Y LEVEL	42	I	YL-YH
7	–	NC	19	–	D-GND	31	O	SHP	43	–	A-GND
8	O	FSC	20	O	CHROMA	32	I	SHP CLP2	44	I	CLP4
9	I	BFG	21	O	V	33	I	DLD	45	I	CLP2
10	I	BF	22	O	Y	34	I	SHP CLP1	46	I	B LEVEL
11	I	CBLK	23	I	SETUP CLP	35	I	DLE	47	I	B-Y
12	I	CTBLK	24	I	WC LEVEL	36	I	SHP LEVEL	48	I	B-Y CLP



CXD1216M (SONY) FLAT PACKAGE

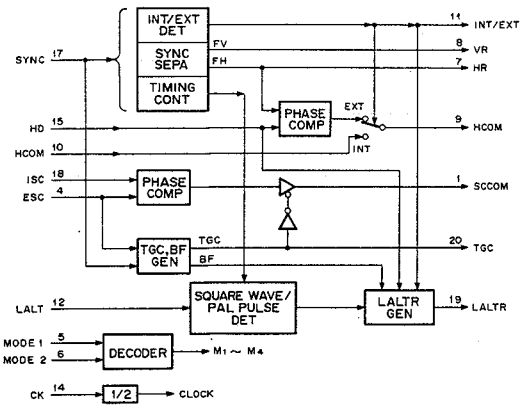
C-MOS GENLOCK DRIVER

– TOP VIEW –



INPUT		MODE	SYSTEM
MODE1	MODE2		
0	0	M1	PAL-VBS
1	0	M2	PALM-VBS
0	1	M3	PAL,SECAM-VS/SC/LALT
1	1	M4	NTSC-VBS,NTSC-VS/SC PALM-VS/SC/LALT

0 ; LOW LEVEL
1 ; HIGH LEVEL



INPUT

CK	; 4fsc CLOCK INPUT
ESC	; SC/COLOR BURST
HCOM	; PHASE COMPARATE FROM CXD1217
HD	; H DRIVE FROM CXD1217
ISC	; SUBCARRIER FROM CXD1217
LALT	; LALT FROM REFERENCE SIGNAL GENERATOR
MODE1,2	; SYSTEM SELECT
SYNC	; SYNC FROM REFERENCE SIGNAL GENERATOR

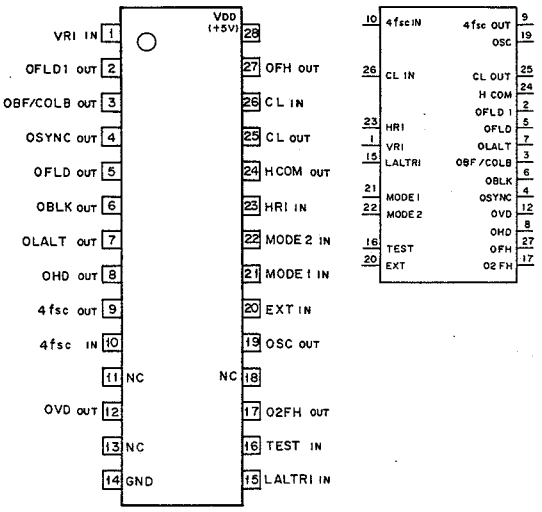
OUTPUT

HCOM	; PHASE COMPARATOR HR WITH HD
HR	; fH OF SYNC SEPARATE
INT/EXT	; INTERNAL/EXTERNAL SPECIFIED
LALTR	; LINE CHANGE RESET
SCCOM	; PHASE COMPARATOR ESC WITH ISC
TGC	; TRISTATE CONTROL
VR	; fV OF SYNC SEPARATE

CXD1217M (SONY) FLAT PACKAGE

C-MOS SYNC GENERATOR

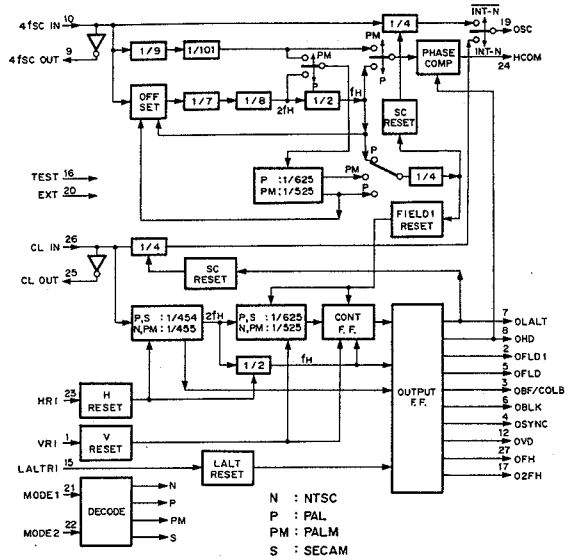
– TOP VIEW –



SYSTEM	4fsc	CLOCK
NTSC	910fH	910fH
PAL	1135fH+2fV	908fH
PALM	909fH	910fH
SECAM	—	908fH

INPUT		SYSTEM
MODE1	MODE2	
0	0	NTSC
0	1	SECAM
1	0	PALM
1	1	PAL

0 ; LOW LEVEL
1 ; HIGH LEVEL



N : NTSC
P : PAL
PM : PALM
S : SECAM

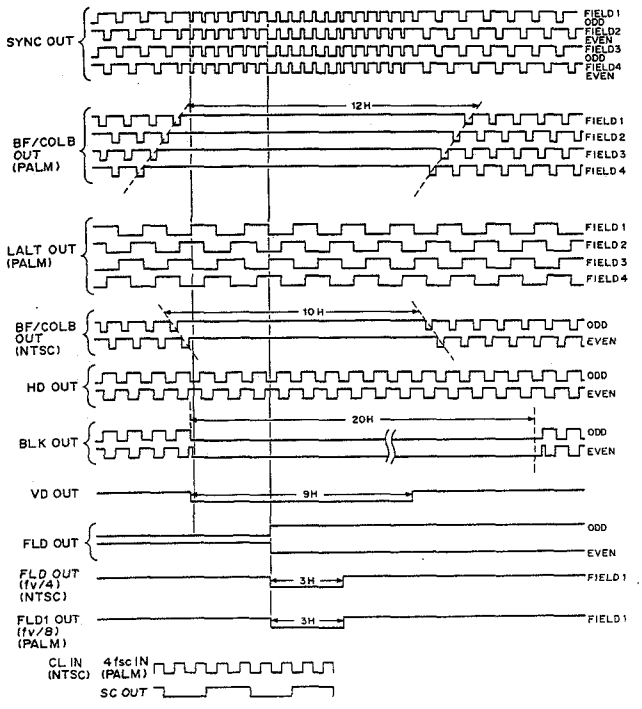
INPUT

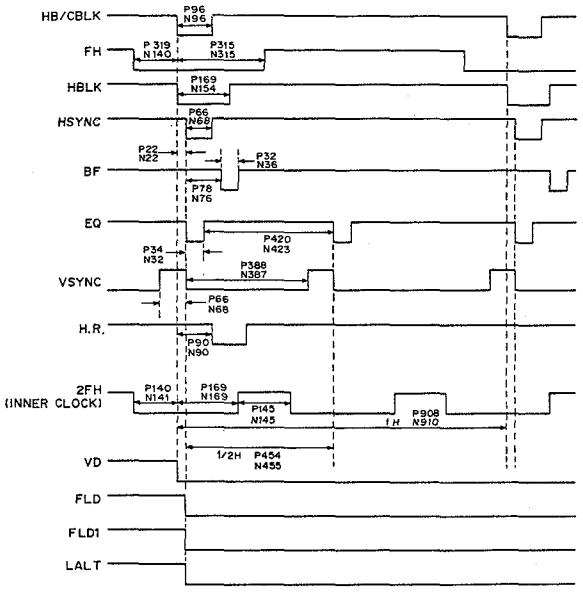
4fSC IN	; 4fSC INPUT
CL IN	; CLOCK INPUT
EXT	; SYNC MODE SELECT (L ; INTERNAL/H ; EXTERNAL)
HRI	; H RESET
LALTRI	; LINE CHANGE RESET
MODE 1,2	; SYSTEM SELECT
VRI	; V RESET

OUT PUT

4fSC OUT	; 4fSC OUTPUT
CL OUT	; CLOCK OUTPUT
HCOM	; PHASE COMPARATOR
O2fH	; 2fH OUTPUT
OBF/COLB	; BURST FLAG/COLOR BLANKING
OBLK	; COMPOSITE BLANKING
OFH	; H FREQUENCE
OFLD	; EVEN, ODD
OFLD1	; FIELD1
OHD	; H DRIVE
OLALT	; LINE CHANGE
OSC	; SUBCARRIER
OSYNC	; COMPOSITE SYNC
OVD	; V DRIVE

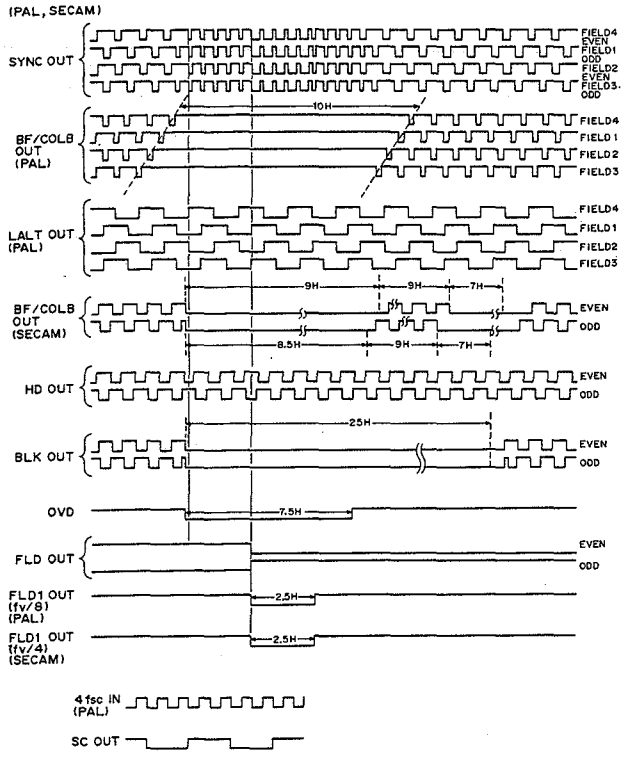
(NTSC, PALM)





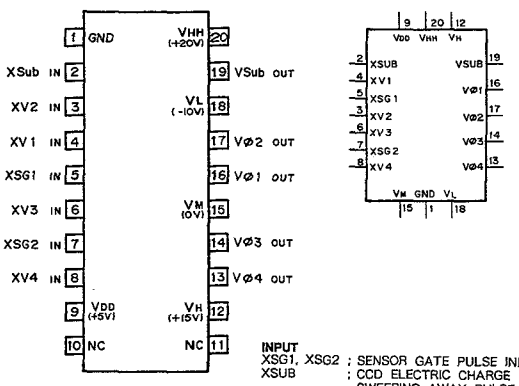
P: PAL, SECAM
N: NTSC, PALM

(PAL, SECAM)



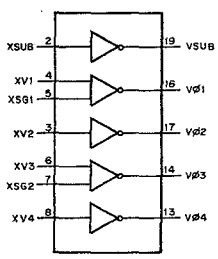
CXD1250M (SONY)

C-MOS VERTICAL CLOCK DRIVER FOR CCD
– TOP VIEW –



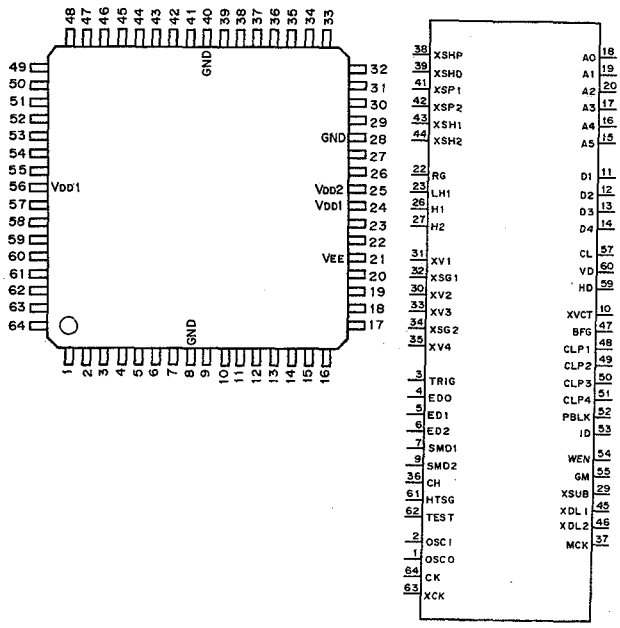
INPUT
XSG1, XSG2 ; SENSOR GATE PULSE INPUT
XSUB ; CCD ELECTRIC CHARGE SWEEPING AWAY PULSE INPUT
XV1-XV4 ; VERTICAL REGISTER TRANSMISSION CLOCK INPUT

OUTPUT
VSUB ; *CCD ELECTRIC CHARGE* SWEEPING AWAY PULSE OUTPUT
V φ 1-V φ 4 ; VERTICAL REGISTER TRANSMISSION CLOCK OUTPUT



CXD1252AR (SONY)

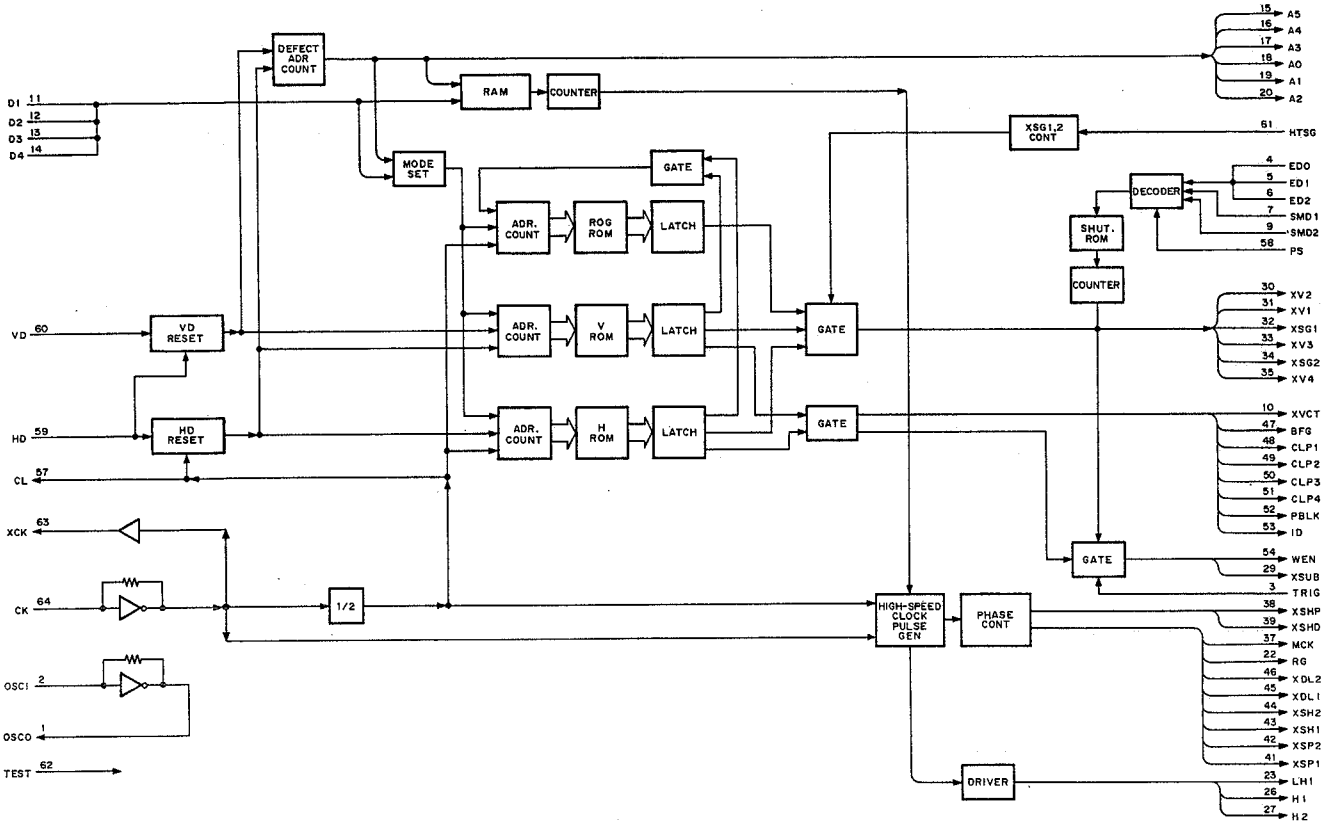
C-MOS TIMING PULSE GENERATOR FOR CCD
– TOP VIEW –



PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL
1	O	OSCO	17	O	A3	33	O	XV3	49	O	CLP2
2	I	OSCI	18	O	A0	34	O	XSG2	50	O	CLP3
3	I	TRIG	19	O	A1	35	O	XV4	51	O	CLP4
4	I	ED0	20	O	A2	36	I	CH	52	O	PBLK
5	I	ED1	21	–	VEE	37	O	MCK	53	O	ID
6	I	ED2	22	O	RG	38	O	XSHP	54	O	WEN
7	I	SMD1	23	O	LH1	39	O	XSHD	55	I	GM
8	–	GND	24	–	VDD1	40	–	GND	56	–	VOO1
9	I	SMD2	25	–	VDD2	41	O	XSP1	57	O	CL
10	O	XVCT	26	O	H1	42	O	XSP2	58	I	PS
11	I	D1	27	O	H2	43	O	XSH1	59	I	HD
12	I	D2	28	–	GND	44	O	XSH2	60	I	VD
13	I	D3	29	O	XSUB	45	O	XDL1	61	I	HTSG
14	I	D4	30	O	XV2	46	O	XDL2	62	I	TEST
15	O	A5	31	O	XV1	47	O	BFG	63	O	XCK
16	O	A4	32	O	XSG1	48	O	CLP1	64	I	CK

INPUT
CH ; MOSAIC/STRIPE COLOR CODING (L ; MOSAIC) SELECT SIGNAL
CK ; MAIN CLOCK PULSE
D1-D4 ; DATA INPUT FOR EXTERNAL ROM
ED0-ED2 ; SHUTTER SPEED CONTROL PULSE
GM ; NORMAL/G3 SELECT SIGNAL (L ; NORMAL, H ; G3)
HD ; *HORIZONTAL DRIVE PULSE*
HTSG ; XSG1, XSG2 CONTROL PULSE (L ; STOP, H ; GENERATE)
OSCI ; INVERTER INPUT FOR OSCILLATOR
SMD1, SMD2 ; SHUTTER MODE SET SIGNAL
TEST ; TEST SIGNAL (H ; TEST MODE)
TRIG ; CONTINUOUS VARIABLE SHUTTER CONTROL PULSE
VD ; VERTICAL DRIVE PULSE

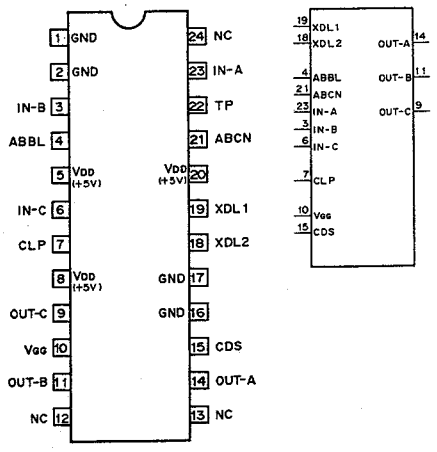
OUTPUT
A0-A5 ; ADDRESS OUTPUT FOR EXTERNAL ROM
BFG ; *ENCODER/CHROMA MODULATOR PULSE*
CL ; 1/2 CK PULSE
CLP1-CLP4 ; CLAMP PULSE
H1, H2 ; CLOCK PULSE FOR DRIVING HORIZONTAL REGISTER
ID ; LINE DISCRIMINATE PULSE (MOSAIC MODE) : L (STRIPE MODE)
LH1 ; CLOCK PULSE FOR DRIVING CCD HORIZONTAL FINAL REGISTER
MCK ; CLOCK PULSE FOR G3
OSCO ; INVERTER OUTPUT FOR OSCILLATOR
PBLK ; BLANKING CLEANING PULSE
RG ; RESET GATE PULSE
WEN ; *WRITE ENABLE PULSE (ONLY LOW SPEED SHUTTER MODE)*
XCK ; INVERTED CK PULSE
XDL1, XDL2 ; DELAY LINE CLOCK (MOSAIC MODE) /CHROMA SEPARATE S/H PULSE (STRIPE)
XSG1, XSG2 ; CCD SENSOR ELECTRIC CHARGE READ OUT PULSE
XSH1, XSH2 ; SELECT S/H PULSE
XSHD ; DATA S/H PULSE
XSHP ; PRE CHARGE S/H PULSE
XSP1, XSP2 ; CHROMA SEPARATE S/H PULSE
XSUB ; CCD ELECTRIC CHARGE SWEEPING AWAY PULSE
XV1-XV4 ; CLOCK PULSE FOR DRIVING CCD VERTICAL REGISTER
XVCT ; *POW*

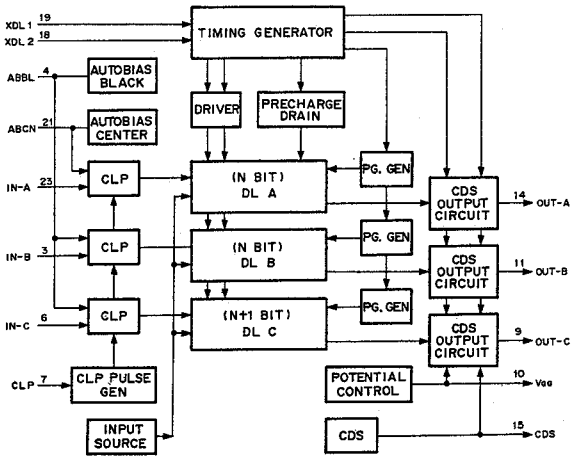


CXL1507N (SONY)

C-MOS CCD SIGNAL PROSESSOR

– TOP VIEW –





INPUT

CLP	; CLAMP PULSE INPUT
IN-A	; SIGNAL INPUT A CHANNEL (C)
IN-B	; SIGNAL INPUT B CHANNEL (Y)
IN-C	; SIGNAL INPUT C CHANNEL (Y)
XDL1, 2	; CLOCK PULSE INPUT 1, 2

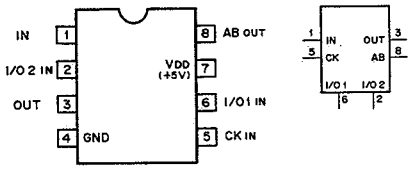
OUTPUT

ABBL	; AUTOBIAS DC OUTPUT FOR Y SIGNAL
ABCN	; AUTOBIAS DC OUTPUT FOR C SIGNAL
CDS	; DC OUTPUT FOR CDS
OUT-A, B, C	; SIGNAL OUTPUT A, B, C CHANNEL
VGG	; OUTPUT CIRCUIT BIAS DC OUTPUT

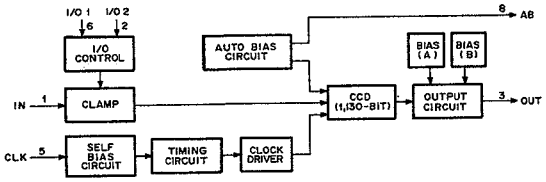
CXL5504M (SONY)

C-MOS CCD 1H DELAY LINE

– TOP VIEW –



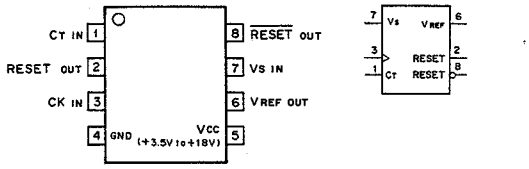
AB ; AUTO BIAS DC OUTPUT
CK ; CLOCK INPUT
IN ; SIGNAL INPUT
I/O1, I/O2 ; I/O CONTROL 1,2 INPUTS
OUT ; SIGNAL OUTPUT

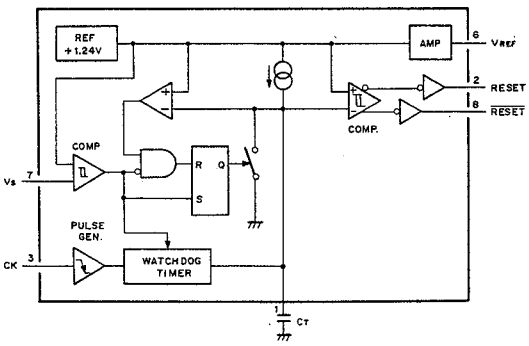


MB3773PF (FUJITSU) FLAT PACKAGE

BIPOLAR SOURCE VOLTAGE SUPERVISOR

– TOP VIEW –

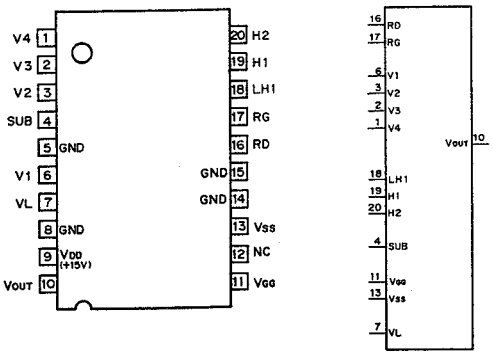




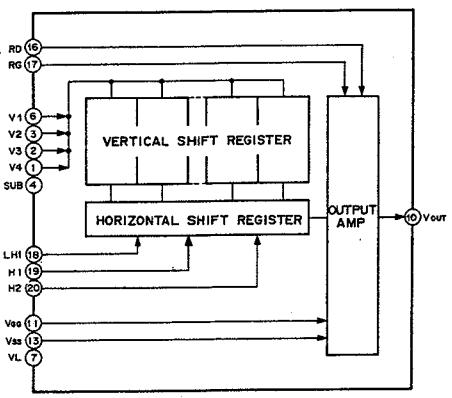
ICX038AN-1 (SONY) (NTSC,COLOR)
ICX039AN-1 (SONY) (PAL,COLOR)

1/2-INCH CCD IMAGE BLOCK

– BOTTOM VIEW –



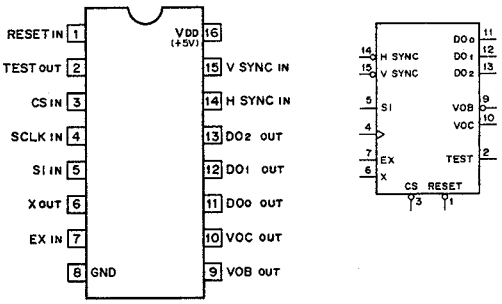
H1, H2 ; HORIZONTAL REGISTER TRANSFER CLOCK
LH1 ; HORIZONTAL REGISTER LAST STAGE TRANSFER CLOCK
RD ; RESET DRAIN BIAS
RG ; RESET GATE CLOCK
SUB ; OVERFLOW DRAIN
VGG ; OUTPUT AMP GATE BIAS
VL ; PROTECTION TRANSISTER BIAS
VSS ; OUTPUT AMP SOURCE
V1 – V4 ; VERTICAL REGISTER TRANSFER CLOCK
VOUT ; SIGNAL OUTPUT



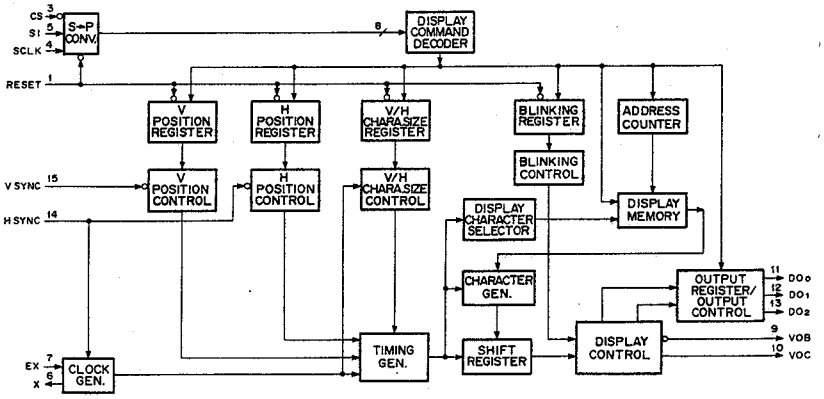
MB88313PF (FUJITSU) FLAT PACKAGE

C-MOS TV DISPLAY CONTROLLER

– TOP VIEW –



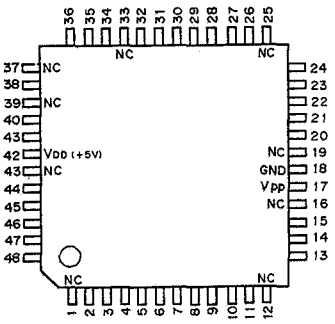
CS ; CHIP SELECT INPUT
DO0 – DO2 ; DATA OUTPUT
EX ; DOT CLOCK INPUT
H SYNC ; H SYNC INPUT
RESET ; RESET INPUT
SCLK ; SHIFT CLOCK INPUT
SI ; SERIAL DATA INPUT
TEST ; CHIP TEST OUTPUT
VOB ; BLINKING SIGNAL OUTPUT
VOC ; CHARACTER SIGNAL OUTPUT
V SYNC ; V SYNC INPUT
X ; DOT CLOCK OUTPUT

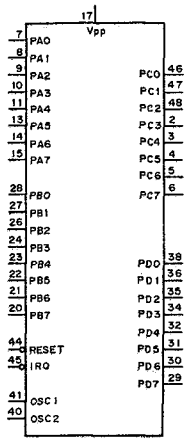


MC68HC05N4 (MOTOROLA)

C-MOS 8-BIT MICROPROCESSOR

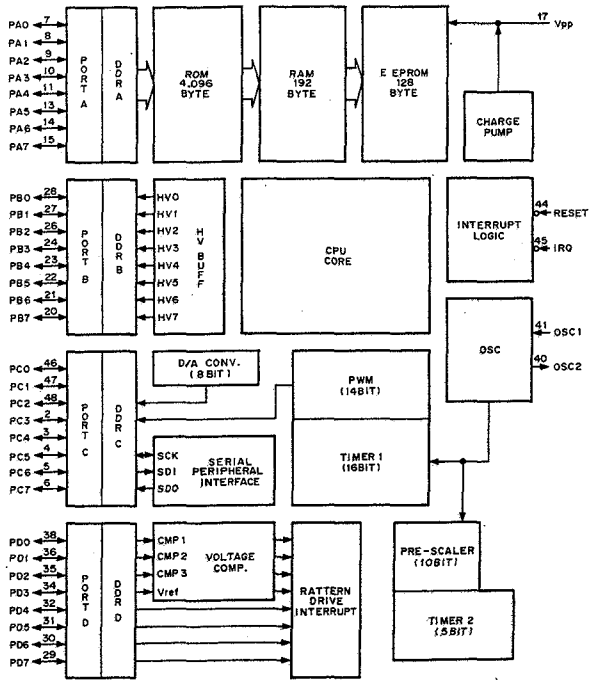
– TOP VIEW –





IRQ ; INTERRUPT REQUEST INPUT
OSC1 ; OSC FREQ INPUT
OSC2 ; OSC FREQ OUTPUT
PA0 – PA7 ; I/O PORT A
PB0 – PB7 ; I/O PORT B
PC0 – PC7 ; I/O PORT C
PD0 – PD7 ; I/O PORT D
RESET ; RESET PULSE INPUT

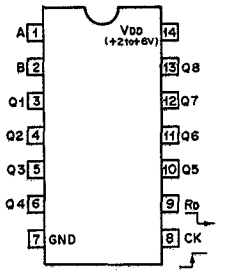
PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL
1	–	NC	13	I/O	PA5	25	–	NC	37	–	NC
2	I/O	PC3	14	I/O	PA6	26	I/O	PB2	38	I/O	PD0
3	I/O	PC4	15	I/O	PA7	27	I/O	PB1	39	–	NC
4	I/O	PC5	16	–	NC	28	I/O	PB0	40	O	OSC2
5	I/O	PC6	17	I	Vpp	29	I/O	PD7	41	I	OSC1
6	I/O	PC7	18	–	GND	30	I/O	PD6	42	–	VDD (+5V)
7	I/O	PA0	19	–	NC	31	I/O	PD5	43	–	NC
8	I/O	PA1	20	I/O	PB7	32	I/O	PD4	44	I	RESET
9	I/O	PA2	21	I/O	PB6	33	–	NC	45	I	IRQ
10	I/O	PA3	22	I/O	PB5	34	I/O	PD3	46	I/O	PC0
11	I/O	PA4	23	I/O	PB4	35	I/O	PD2	47	I/O	PC1
12	–	NC	24	I/O	PB3	36	I/O	PD1	48	I/O	PC2

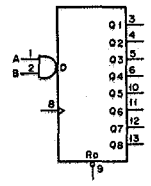


MC74HC164F (MOTOROLA) FLAT PACKAGE

C-MOS 8-BIT SERIAL-IN/PARALLEL-OUT SHIFT REGISTER

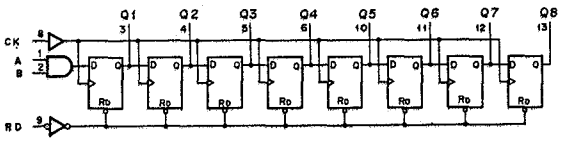
– TOP VIEW –





INPUTS				OUTPUTS			
Rd	CK	A	B	Q1	Q2	----	Q8
0	X	X	X	0	0	0	0
1	0	X	X	Q1o	Q2o	----	Q8o
1	↑	1	1	1	Q1n	----	Q7n
1	↑	0	X	0	Q1n	----	Q7n
1	↑	X	0	0	Q1n	----	Q7n

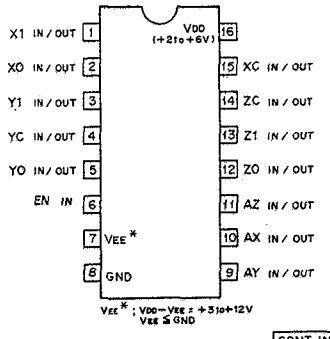
0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

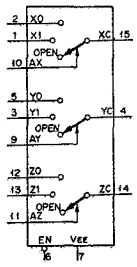


MC74HC4053F (MOTOROLA) FLAT PACKAGE

C-MOS TRIPLE 2-CHANNEL ANALOG MULTIPLEXER/DEMULTIPLEXER

– TOP VIEW –





CONT. INPUTS		ON
EN	A (X,Y,Z)	CHANNEL
0	0	0
0	1	1
1	X	OPEN

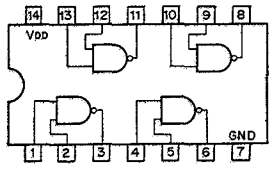
0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE.

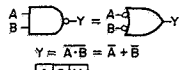
SN74HC00NS (TI) FLAT PACKAGE

uPD74HC00G (NEC) FLAT PACKAGE

C-MOS QUAD 2-INPUT NAND GATE

– TOP VIEW –





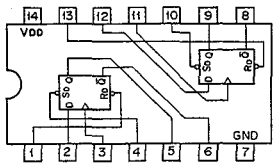
A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

0; LOW LEVEL
1; HIGH LEVEL

TYPE	VDD
TC74AC00P	+2 to +5.5V
MC74HCT00N 74ACT00PC	+5V
OTHER TYPES	+2 to +6V

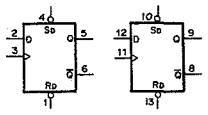
SN74HC74NS (TI) FLAT PACKAGE
uPD74HC74G (NEC) FLAT PACKAGE

C-MOS D-TYPE FLIP FLOP WITH DIRECT SET/RESET
– TOP VIEW –



INPUTS				OUTPUTS	
$\overline{SD}$	$\overline{RD}$	CK	D	Qn+1	$\overline{Qn+1}$
0	1	X	X	1	0
1	0	X	X	0	1
0	0	X	X	1	1
1	1	↑	1	1	0
1	1	↑	0	0	1
1	1	0	X	Qn	$\overline{Qn}$

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

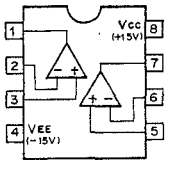


NOTE :

TYPE	VDD
74AC/74HC	+2 to +6V
74ACT	+5V

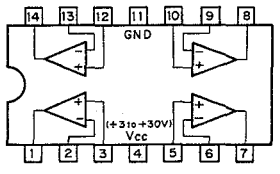
TL072CPS (TI) FLAT PACKAGE

OPERATIONAL AMPLIFIER
(LOW-NOISE, JFET-INPUT)
– TOP VIEW –



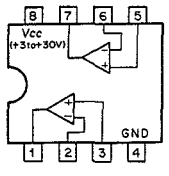
uPC324G2 (NEC) FLAT PACKAGE

QUAD. OP AMPLIFIER
– TOP VIEW –



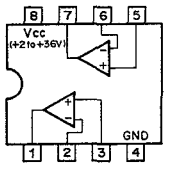
uPC358G2 (NEC) FLAT PACKAGE

DUAL OPERATIONAL AMPLIFIERS
– TOP VIEW –



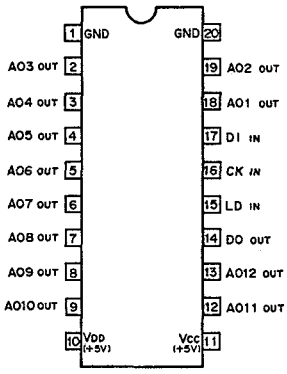
uPC393G2 (NEC) FLAT PACKAGE

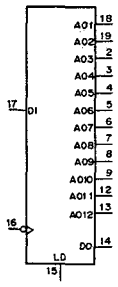
DUAL VOLTAGE COMPARATORS
– TOP VIEW –



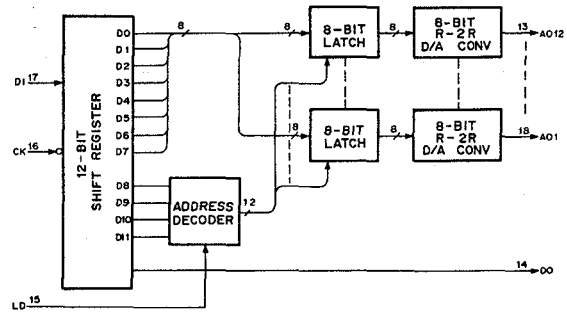
MB88341PFV (FUJITSU) FLAT PACKAGE

C-MOS 8-BIT D/A CONVERTER
– TOP VIEW –



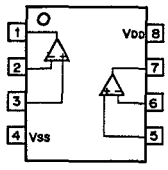


AO1 – AO12 : 8-BIT D/A OUTPUTS
CK : CLOCK INPUT
DI : SERIAL DATA INPUT
DO : DATA OUTPUT
LD : DATA LOAD CONTROL INPUT (H : LOAD)



MC14577AF (MOTOROLA)

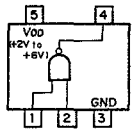
DUAL VIDEO AMPLIFIER
– TOP VIEW –

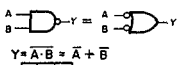


※ |VDD| + |VSS| = +5V to +12V

SC7S00F (MOTOROLA) FLAT PACKAGE

C-MOS 2-INPUT NAND GATE
– TOP VIEW –





$Y = \overline{A \cdot B} = \overline{A} + \overline{B}$

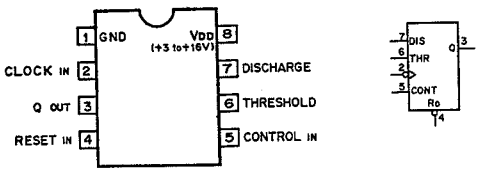
A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

0 ; LOW LEVEL
1 ; HIGH LEVEL

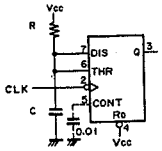
μPD5555G (NEC) FLAT PACKAGE

C-MOS PRECISION TIMER

– TOP VIEW –

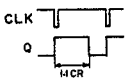


MONOSTABLE MULTIVIBRATOR

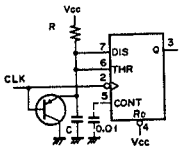


INPUTS		OUT
RD	CLK	Q
0	X	0
1	⌐	⌐

0 , LOW LEVEL
1 , HIGH LEVEL
X , DON'T CARE

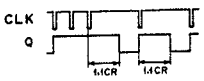


RETRIGGERABLE MONO. MULTIVIBRATOR
(MISSING PULSE DETECTOR)

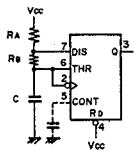


INPUTS		OUT
RD	CLK	Q
0	X	0
1	⌐	⌐

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

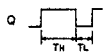


ASTABLE MULTIVIBRATOR



RD	Q
0	0
1	⌐

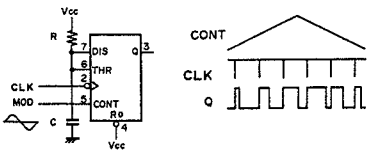
0 ; LOW LEVEL
1 ; HIGH LEVEL



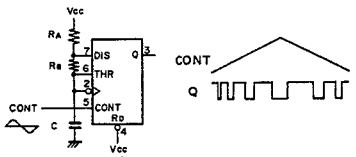
$T_H = 0.693C\ (R_A + R_B)$

$T_L = 0.693C\ R_B$

PULSE WIDTH MODULATOR

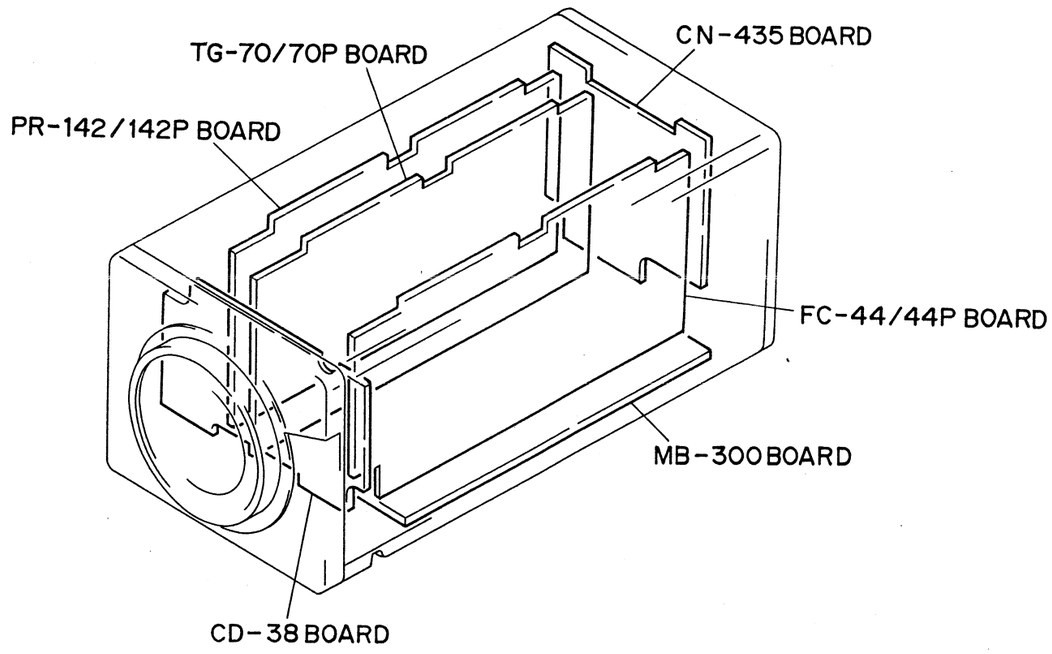


VCO
(PULSE POSITION MODULATOR)

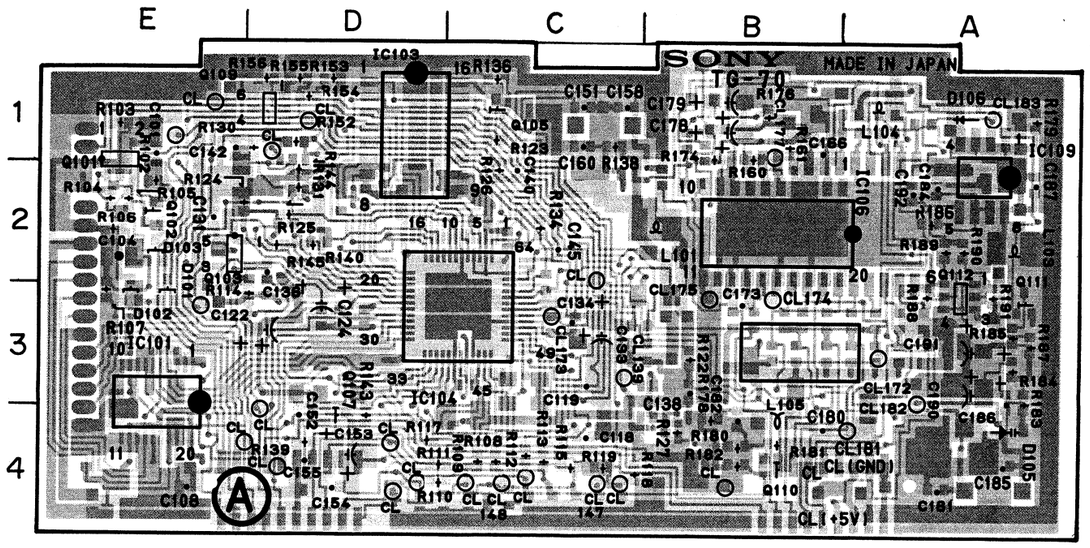


SECTION C
SCHEMATIC DIAGRAMS AND BOARD ILLUSTRATION

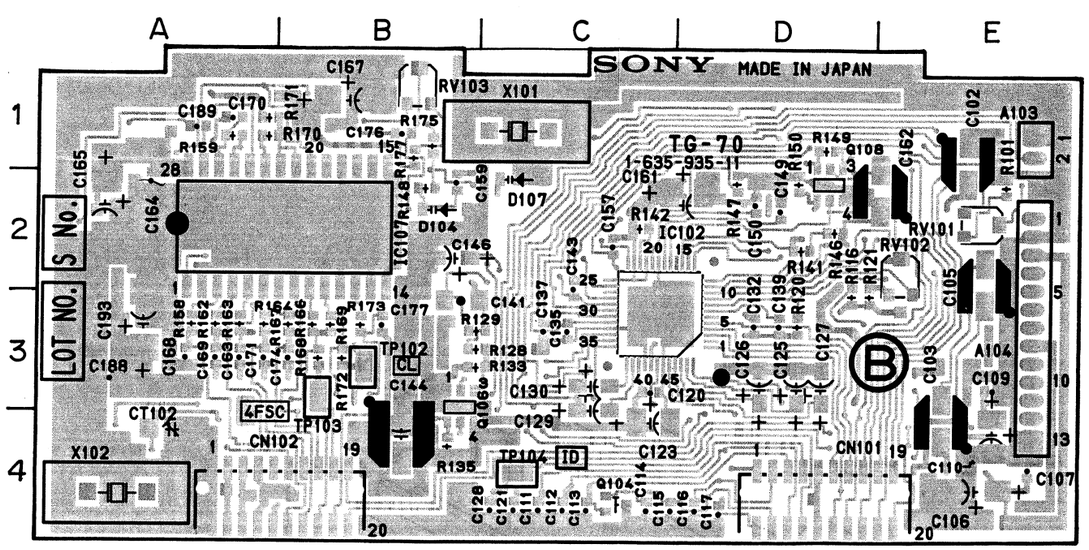
BOARD LAYOUT



TG-70/70P BOARD

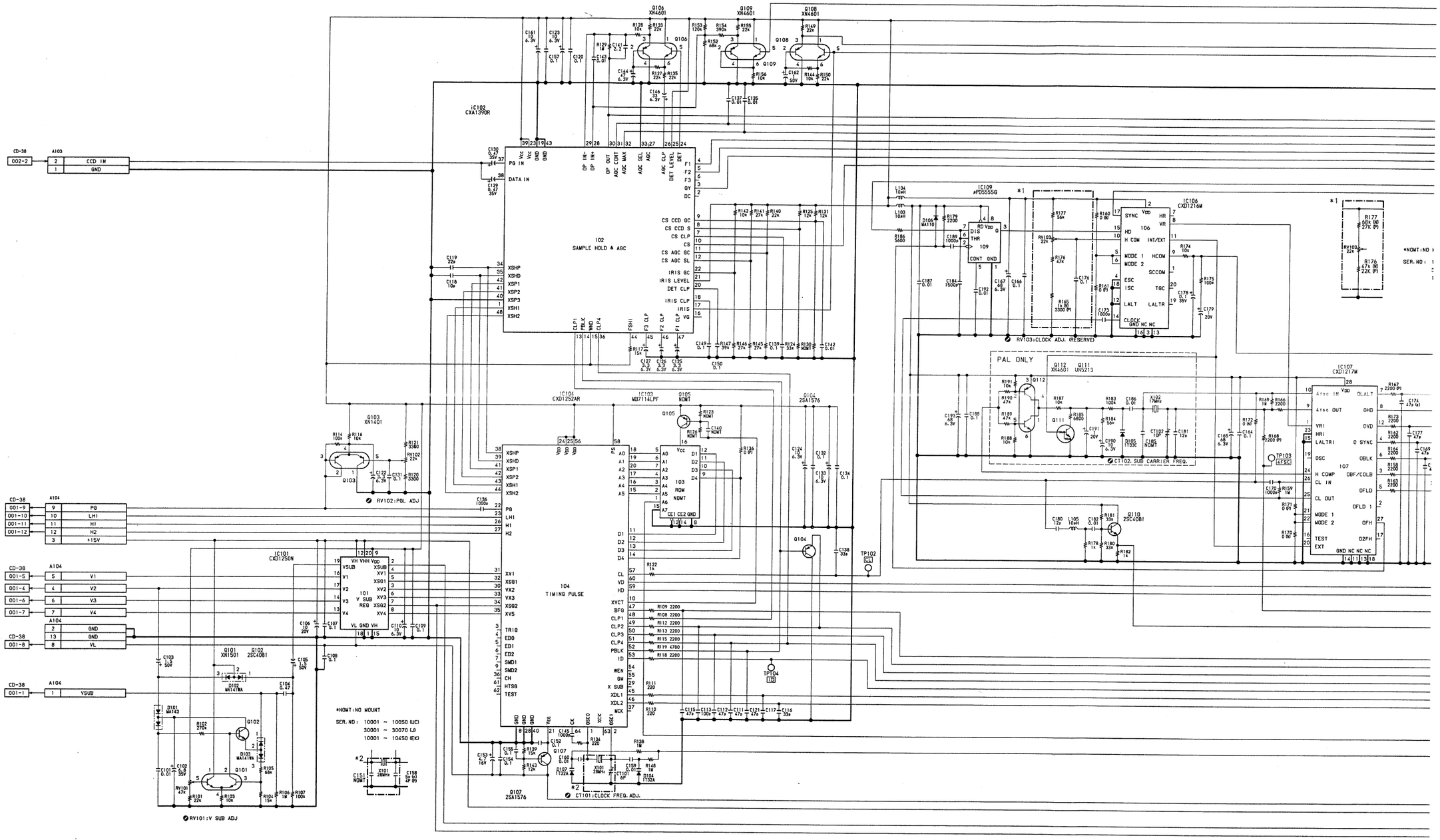


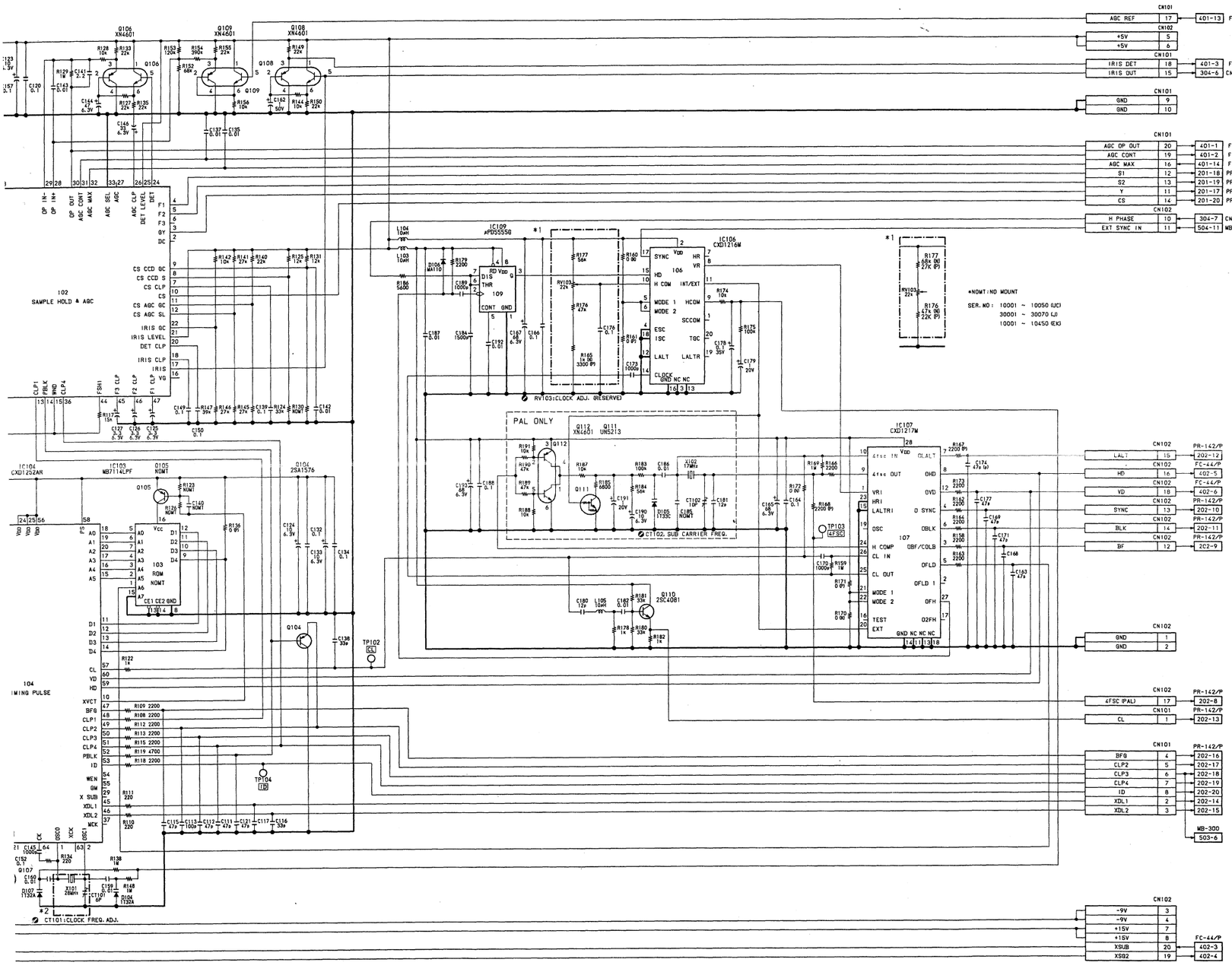
1-635-935-11 COMPONENT SIDE



1-635-935-11 SOLDERING SIDE

TG-70/70P BOARD





TG-70 BOARD
TG-70P BOARD

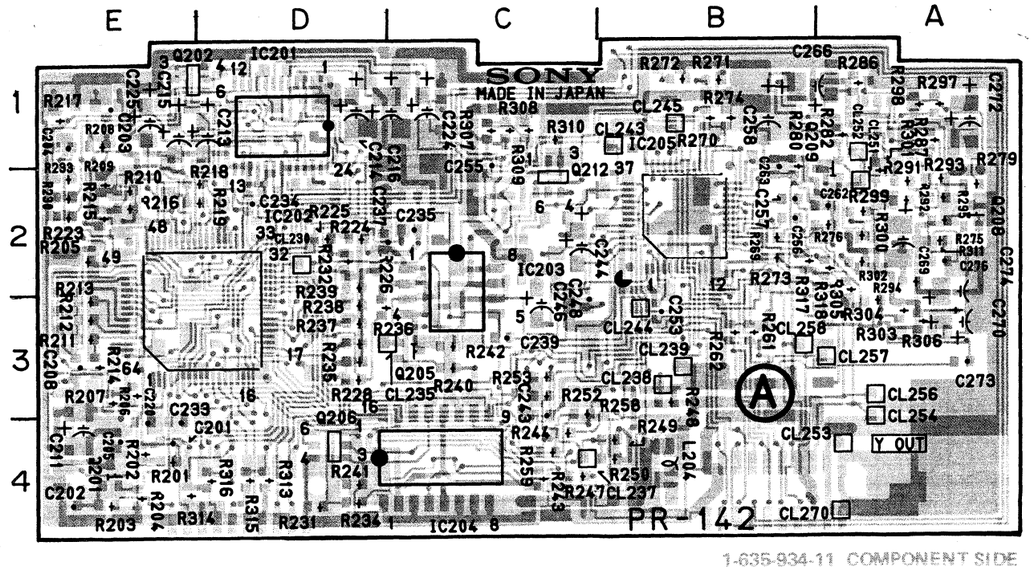
DXC-107 (UC)
DXC-107 (J)
DXC-107P (EK)

C-6 C-7

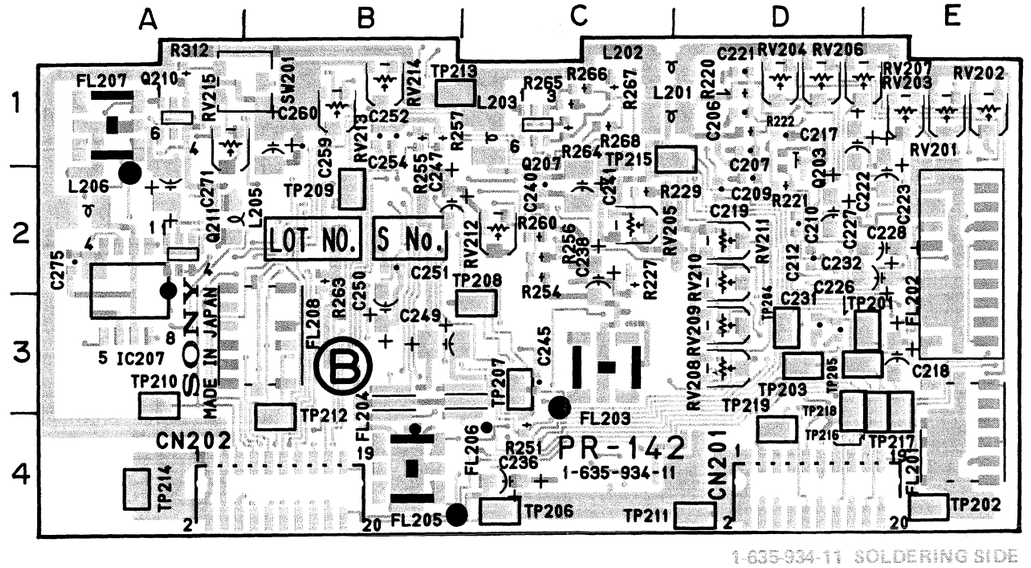
E F G H I J K L

1 2 3 4 5

PR-142/142P BOARD

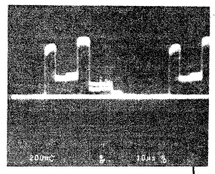


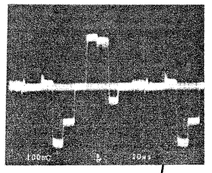
1-635-934-11 COMPONENT SIDE

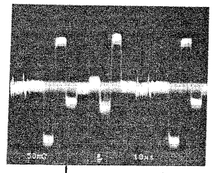


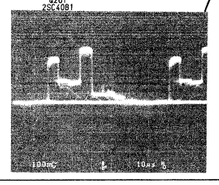
1-635-934-11 SOLDERING SIDE

PR-142/142P BOARD





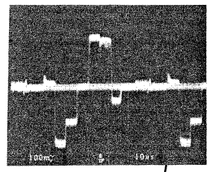


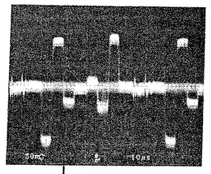


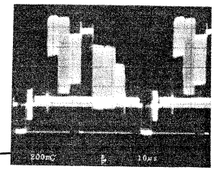
*1 SER. NO: 30071 and higher (J)
10051 and higher (UC)
10451 and higher (EK)

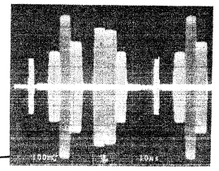
* NOMT; NO MOUNT

NTSC ONLY









IC204 MC74HC40SS CHR. MIX
Q206 XN4601
Q212 XN4601
Q207 XN4601
TP213 5V
CN202 +5V 3, +5V 4
CN201 AGC CONT 6 → FC-44/P 401-2
L202 10nH
L204 10nH
RV211:R-Y HUE
RV210:B-Y HUE
RV208:R-Y GAIN
RV209:B-Y GAIN
TP203 VAP OUT
FL205 30MS
Q206 2SC945
TP214 GND
CN202 GND 1, GND 2
RV212:B LEVEL
CN202 BFO 16 → TG-70/P 101-4; BF 9 → 102-12; CBLK 11 → 102-14
CN202 CLP 2 17 → TG-70/P 101-5; CLP 4 19 → 101-7
TP208 R-Y, TP207 B-Y
IC205 CXA1392R VIDEO SIGNAL ENCODER
TP210 Y OUT
CN202 VIDEO OUT 5 → WB-300 502-5; VIDEO GND 6
TP209 C OUT
CN202 C OUT 7 → WB-300 502-7
CN202 SYNC 10 → TG-70/P 102-13
CN202 LALT 12 → TG-70/P 102-15; 4FSC (PAL) 8 → 102-17
CN202 CL 13 → TG-70/P 101-1
IC203 CXL5504M 1H DELAY LINE
Q205 2SA1576
IC201 CXL1507N SIGNAL PROCESSOR
Q211 XN4501
Q208 2SA1576
Q210 XN4501
Q209 2SC4081
TP212 C IN
FL208 BPF
FL207 230KS
LPF
TP211 GND
IC207 CXL5504M 1HDELAY LINE
RV215:C COMB GAIN
RV20S:DLYH GAIN
RV214:Y LEVEL
RV213:SETUP LEVEL
CN201 WB B 13, WB G 14, WB R 15 → FC-44/P 401-8; 401-7; 401-6
CN202 CLP3 18 → TG-70/P 101-6; XDL1 14 → 101-2; XDL2 15 → 101-3
TP215 WB B, TP216 WB G, TP217 WB R

PR-142 BOARD
PR-142P BOARD
DXC-107 (UC)
DXC-107 (J)
DXC-107P (EK)

NTSC ONLY

C-12

注意：

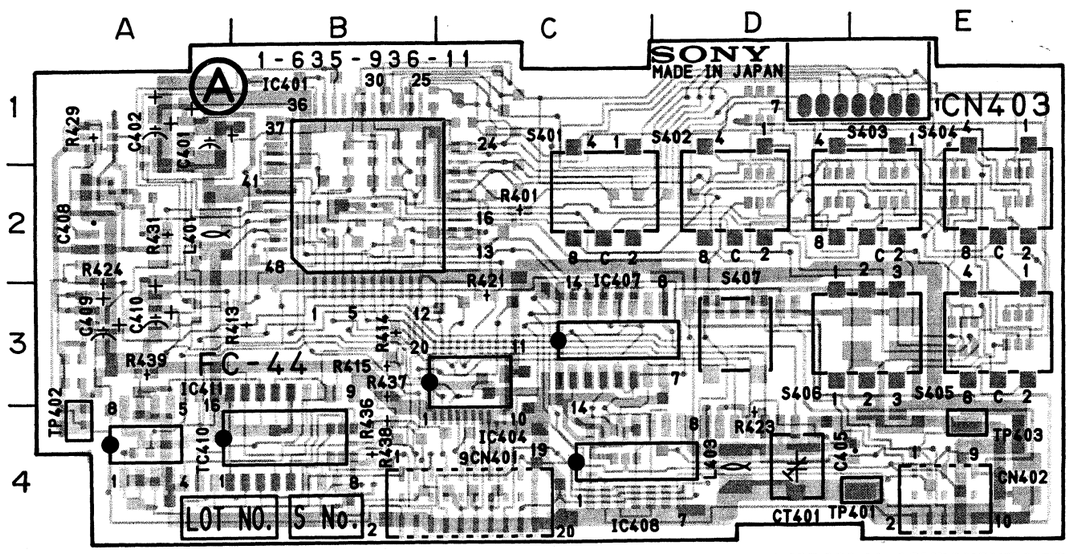
1. 波形写真は下記条件で撮影。
   - CD-38基板，TP001にてカラーバーの白部分が150mVp-pになるようレンズアイリスをセットする。
     (F ≒ 4, 波形モニターで100IRE)
   - カメラIDスイッチ（S401～404）
     ／FC-44基板→スペース［“–”］
   - シャッタースイッチ（S405）／FC-44基板→OFF［“0”］
   - ホワイトバランススイッチ（S406 No.1, No.2）
     ／FC-44基板→INDOOR［No.1 “ON”, No.2 “OFF”］
   - ゲインスイッチ（S406 No.3）／FC-44基板→AGC［“ON”］

Note:

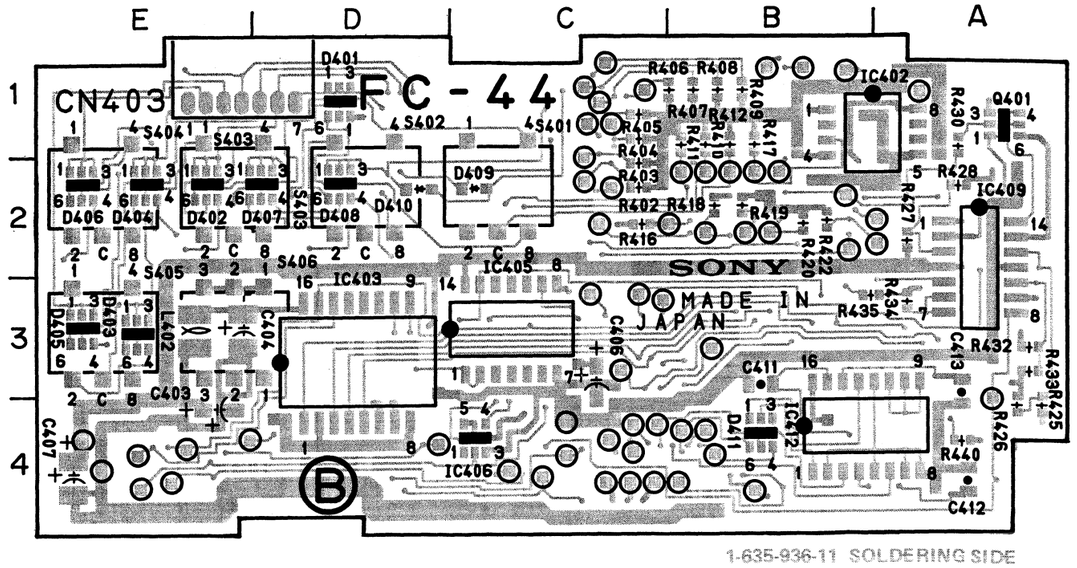
1. All waveforms are taken in conditions below.
   - Shoot the color bar pattern on the pattern box. Adjust lens iris so that a white level at TP001/CD-38 board is 150 mV. [F ≒ 4, White level on the waveform monitor is 100 IRE (700 mV for PAL)]
   - CAMERA ID switch/FC-44/P board → SPACE [“–”]
   - SHUTTER switch (S405)/FC-44/P board → OFF [“0”]
   - WHITE BALANCE switch (S406 No.1, No.2) /FC-44/P board → INDOOR [No.1 “ON”, No.2 “OFF”]
   - GAIN switch (S406 No.3)/FC-44/P board → AGC [“ON”]

C-13

FC-44/44P BOARD

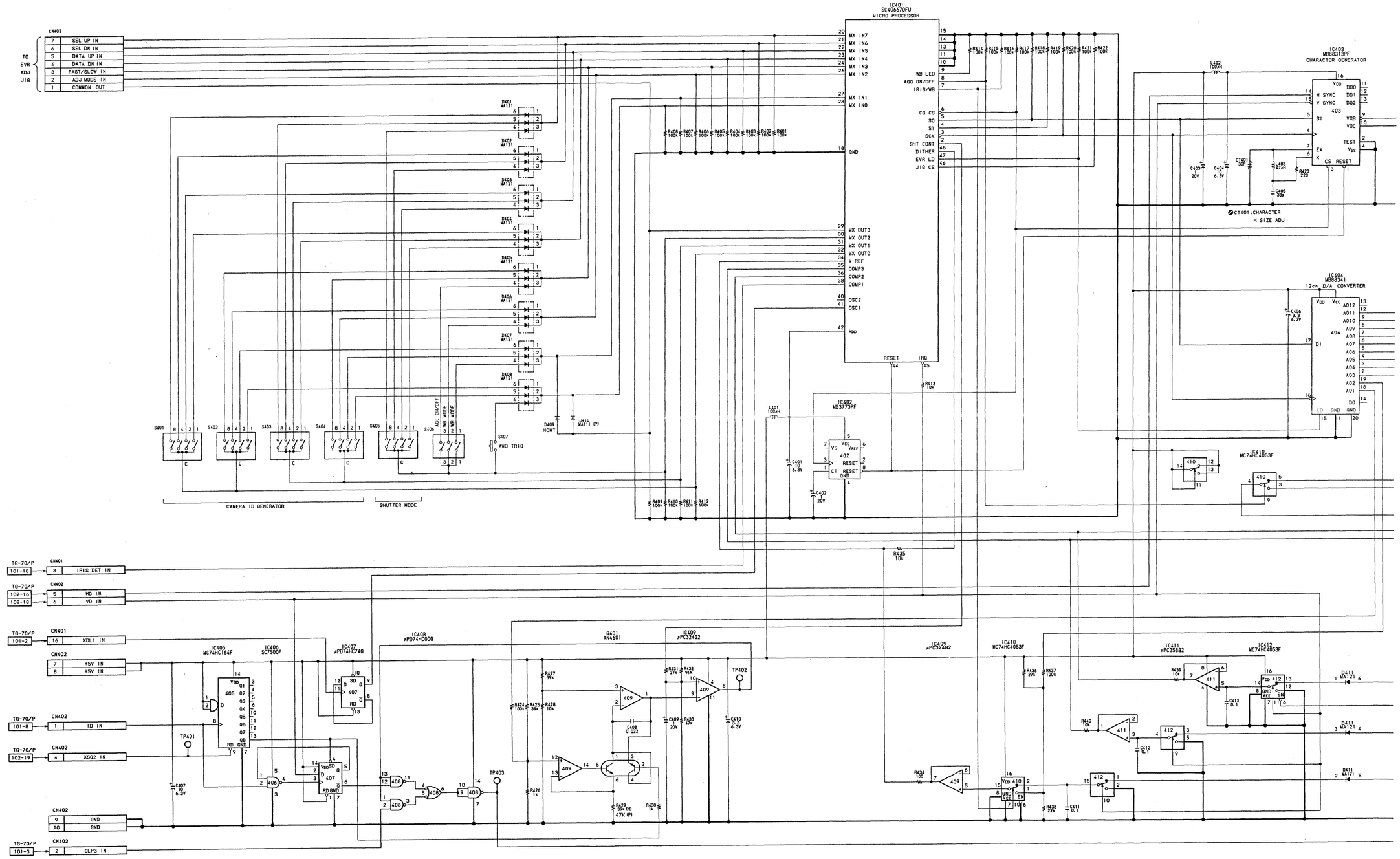


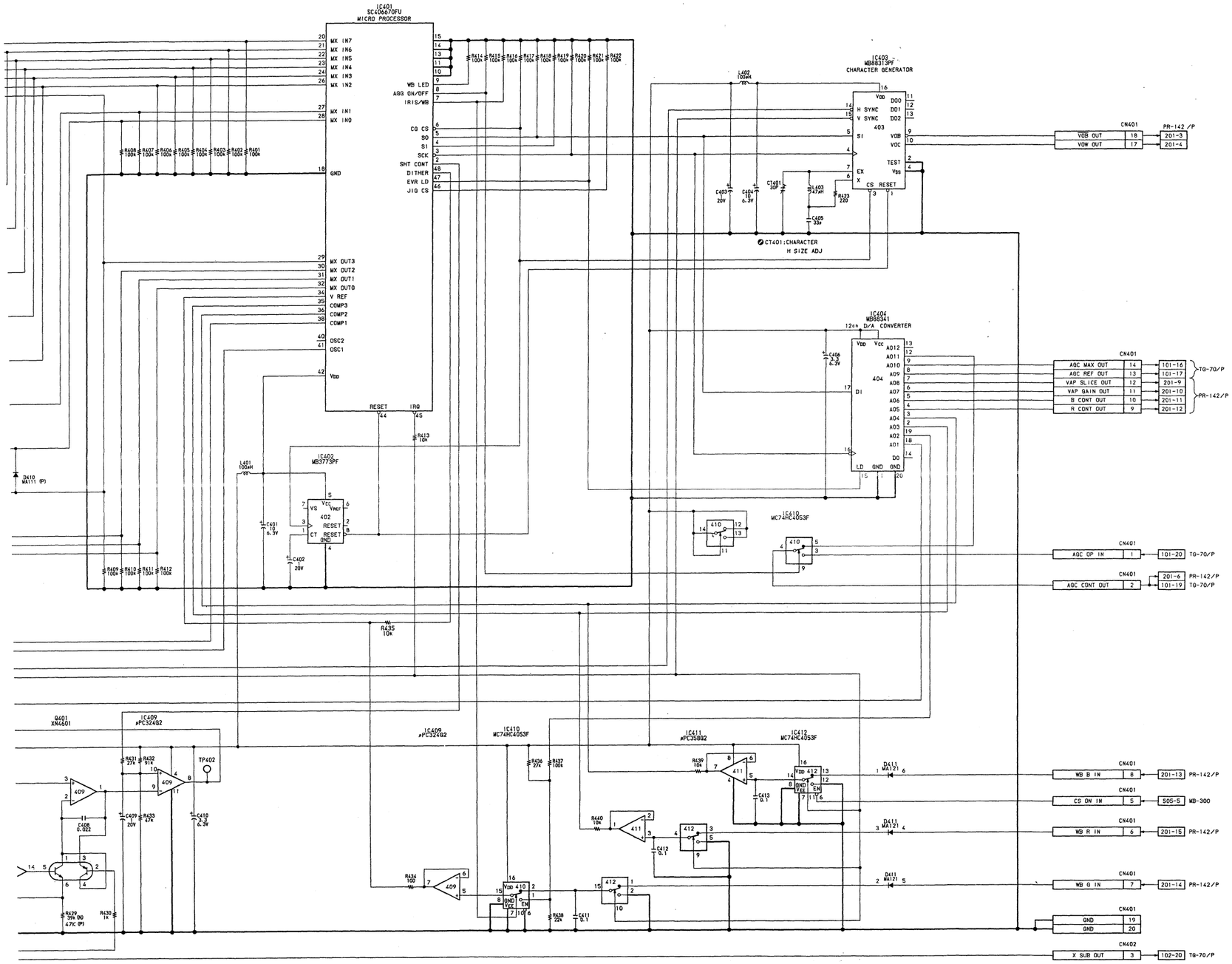
1-635-936-11 COMPONENT SIDE



1-635-936-11 SOLDERING SIDE

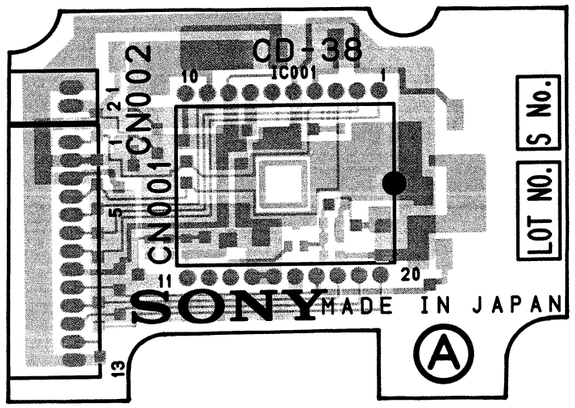
FC-44/44P BOARD



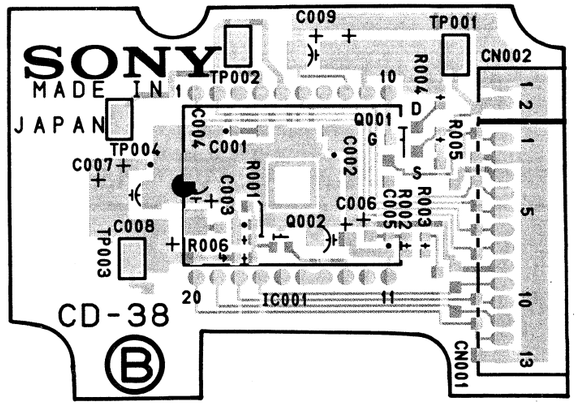


FC-44 BOARD DXC-107 (UC)
FC-44P BOARD DXC-107 (J)
DXC-107P (EK)

CD-38 BOARD

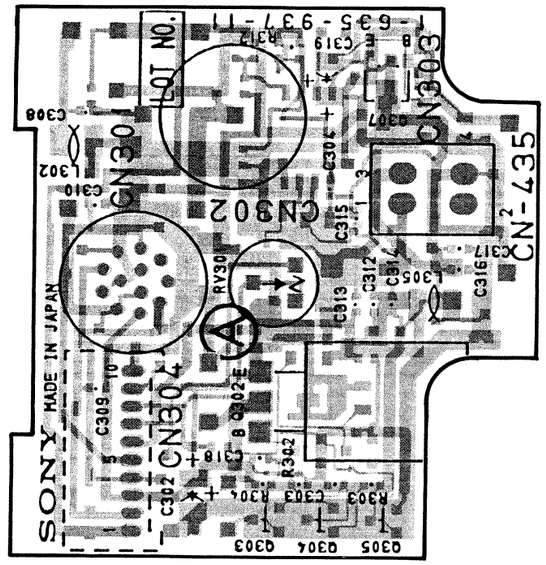


1-635-933-11 COMPONENT SIDE

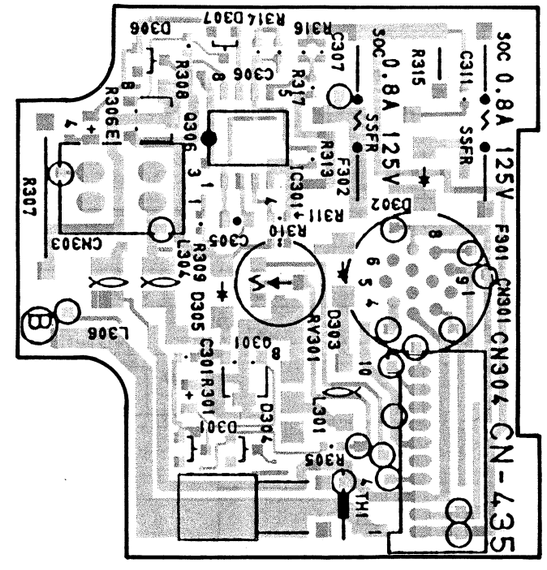


1-635-933-11 SOLDERING SIDE

CN-435 BOARD



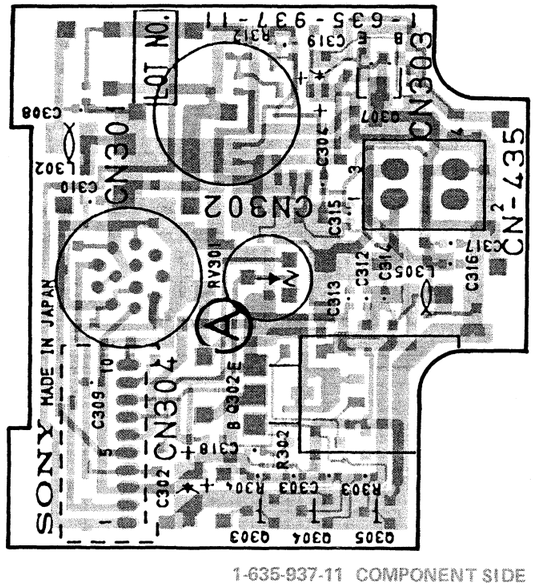
1-635-937-11 COMPONENT SIDE



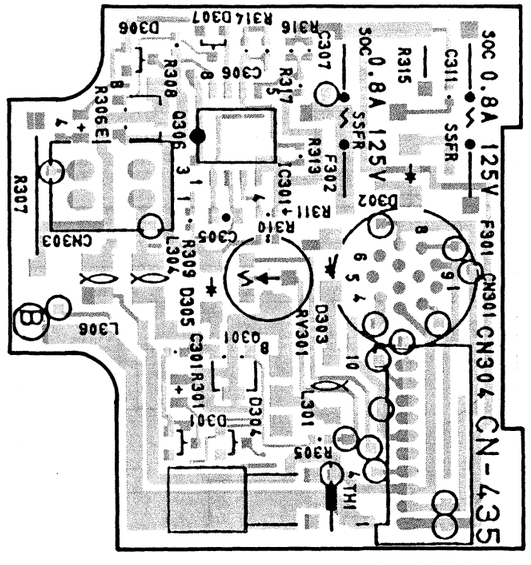
1-635-937-11 SOLDERING SIDE

FRAME WIRING CD-38, CN-435, MB-300

CN-435 BOARD

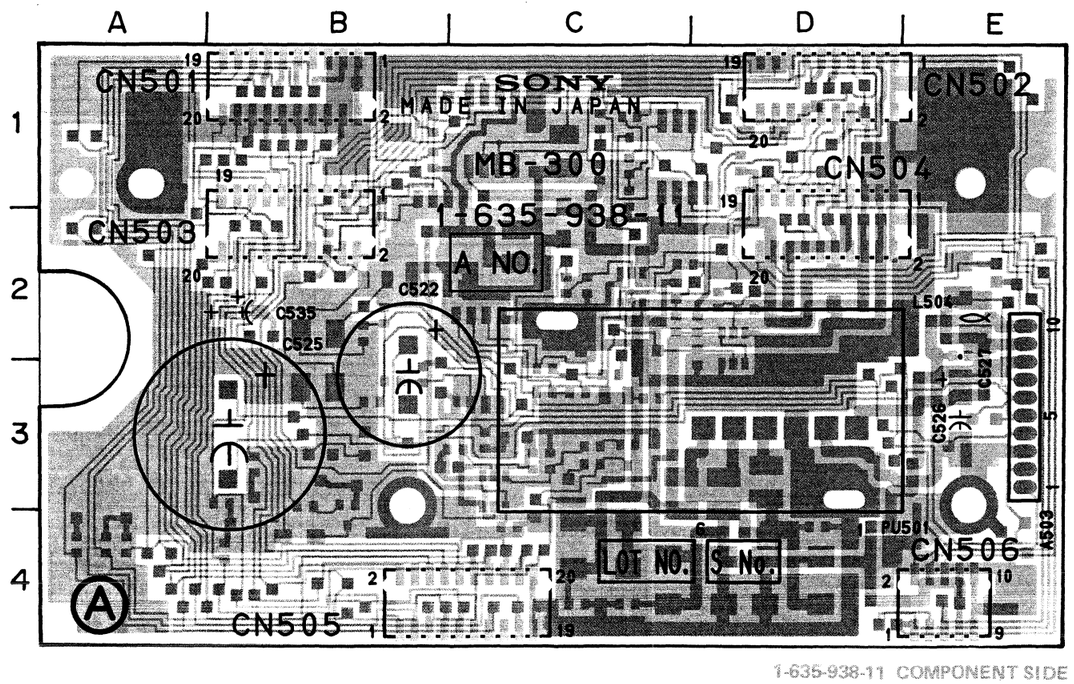


1-635-937-11 COMPONENT SIDE

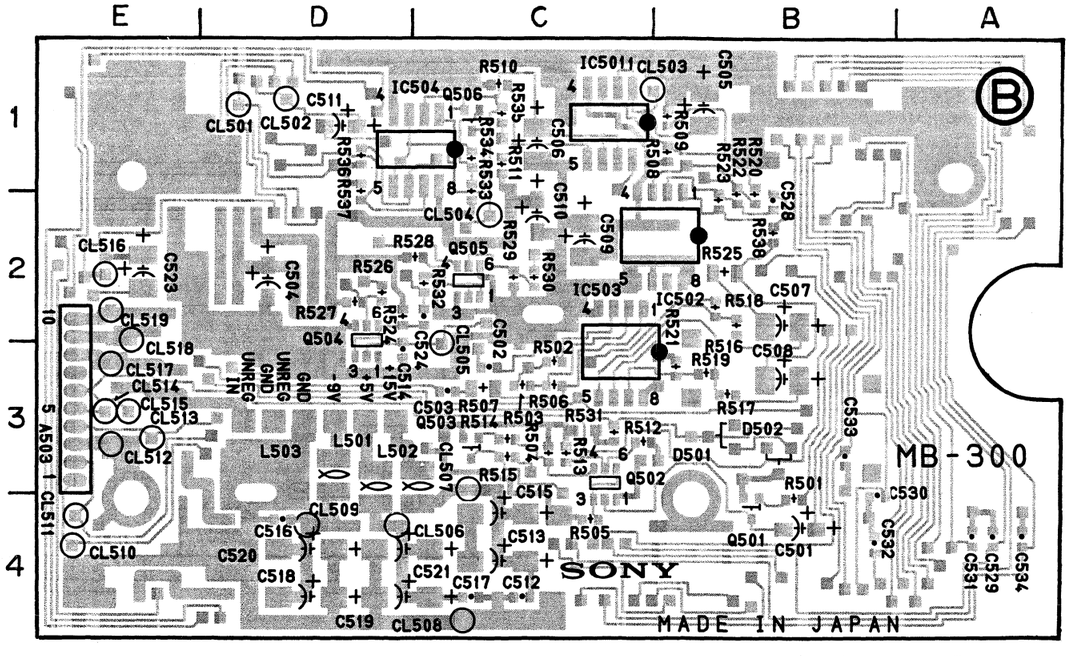


1-635-937-11 SOLDERING SIDE

MB-300 BOARD



1-635-938-11 COMPONENT SIDE



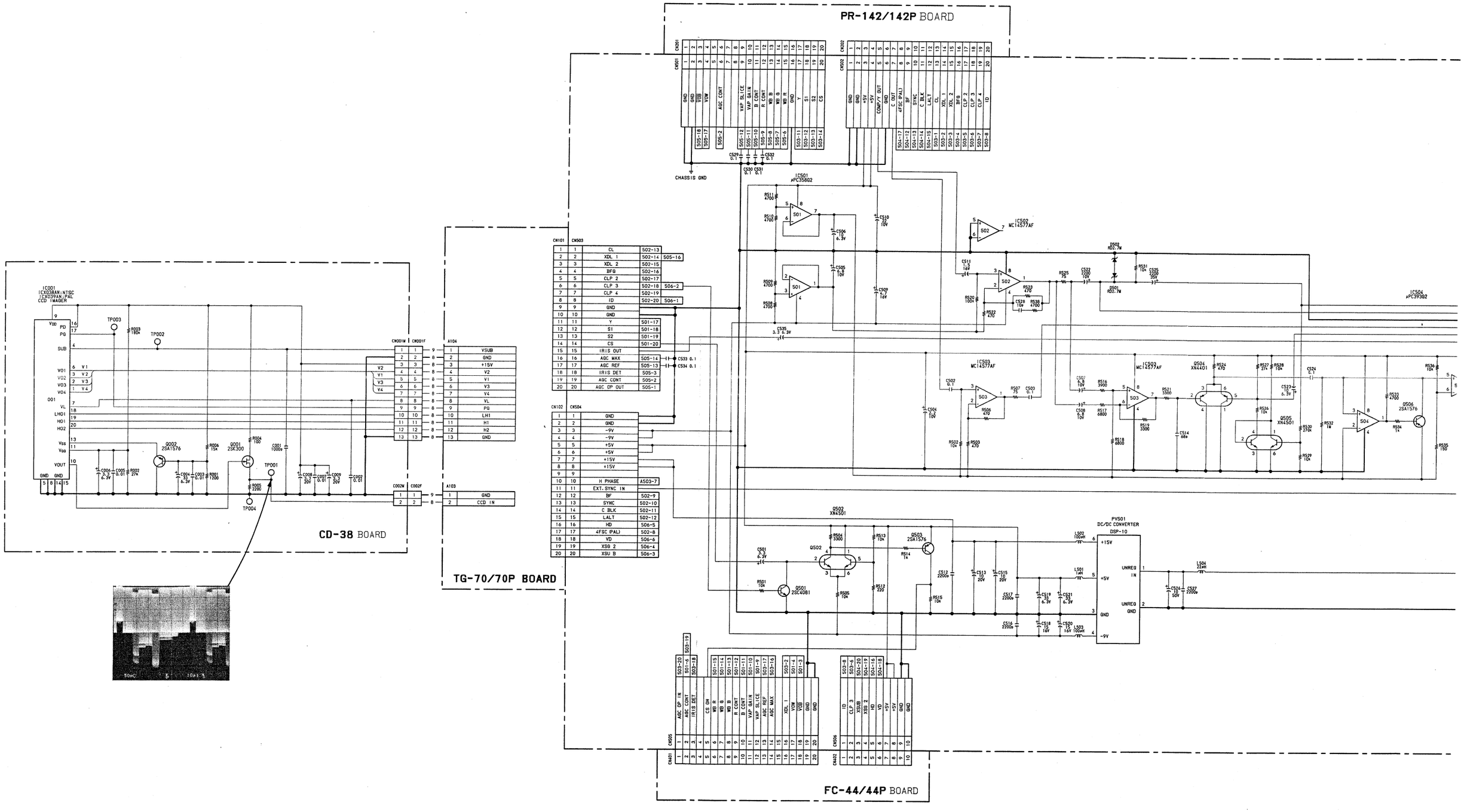
1-635-938-11 SOLDERING SIDE

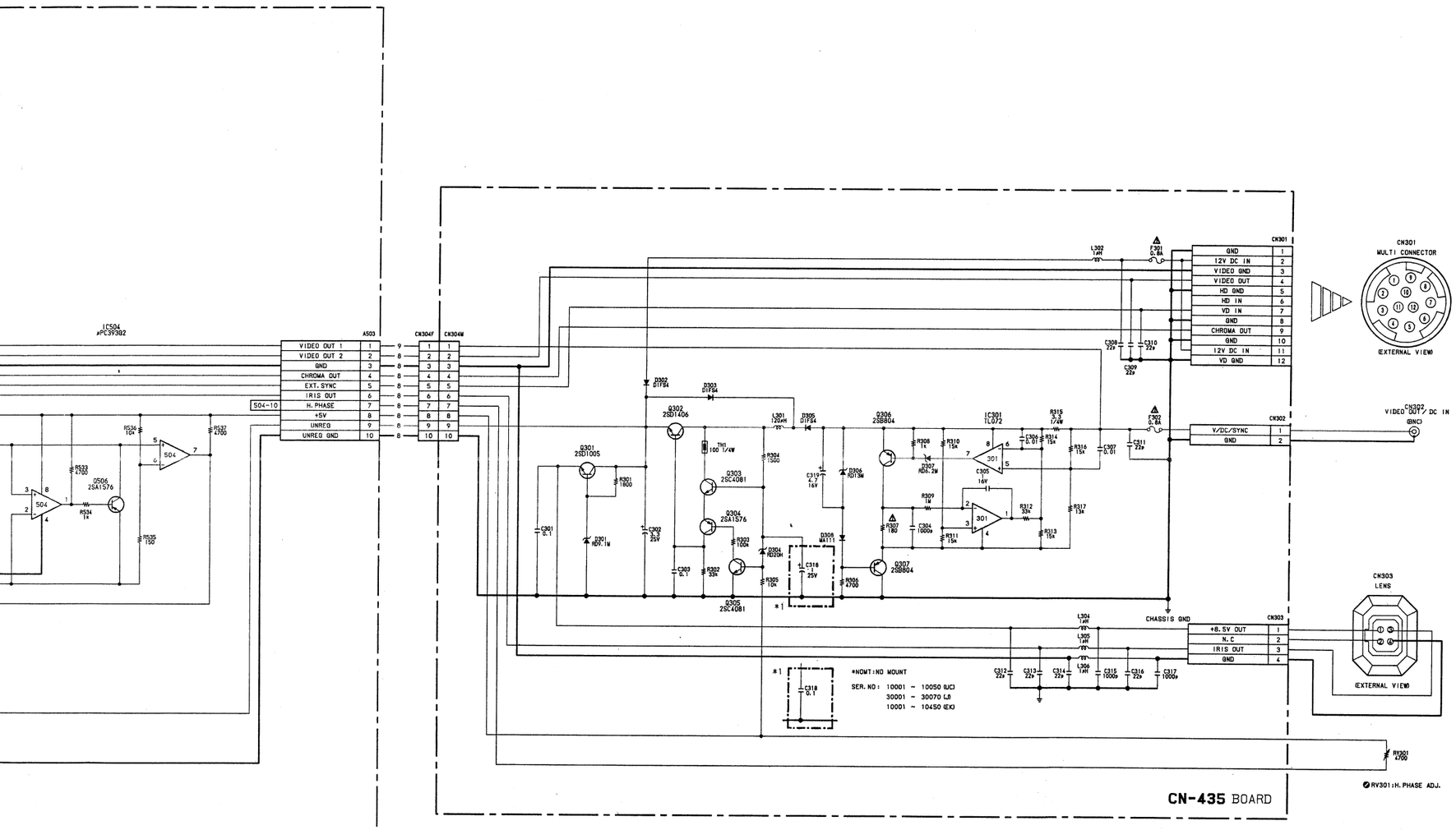
FRAME WIRING

CD-38 BOARD

CN-435 BOARD

MB-300 BOARD





FRAME WIRING
CD-38 BOARD
CN-435 BOARD
MB-300 BOARD
DXC-107 (UC)
DXC-107 (J)
DXC-107P (EK)

注意：

1. 波形写真は下記条件で撮影。
   - CD-38基板，TP001にてカラーバーの白部分が150mVp-pになるようレンズアイリスをセットする。
     (F ≒ 4，波形モニターで100IRE)
   - カメラIDスイッチ（S401～404）
     ／FC-44基板→スペース［“–”］
   - シャッタースイッチ（S405）／FC-44基板→OFF［“0”］
   - ホワイトバランススイッチ（S406 No.1，No.2）
     ／FC-44基板→INDOOR［No.1 “ON”，No.2 “OFF”］
   - ゲインスイッチ（S406 No.3）／FC-44基板→AGC［“ON”］

Note:

1. All waveforms are taken in conditions below.
   - Shoot the color bar pattern on the pattern box. Adjust lens iris so that a white level at TP001/CD-38 board is 150 mV. [F ≒ 4, White level on the waveform monitor is 100 IRE (700 mV for PAL)]
   - CAMERA ID switch/FC-44/P board → SPACE [“–”]
   - SHUTTER switch (S405)/FC-44/P board → OFF [“0”]
   - WHITE BALANCE switch (S406 No.1, No.2) /FC-44/P board → INDOOR [No.1 “ON”, No.2 “OFF”]
   - GAIN switch (S406 No.3)/FC-44/P board → AGC [“ON”]

SECTION D
SPARE PARTS

PARTS INFORMATION

1. **Safety Related Component Warning**

   Components identified by shading marked with ⚠ on the schematic diagrams, exploded views and electrical spare parts list are critical to safe operation. Replace these components with Sony parts whose parts numbers appear as shown in this manual or in service manual supplements published by Sony.

2. Replace parts that are supplied from Sony Parts Center can sometimes have different shape and external appearance than what are actually used in equipment. This is due to"accommodating the improved parts and/or engineering changes" or"standardization of genuine parts."
   - This manual's exploded view and electrical spare parts lists are indicating the parts numbers of "the standardized genuine parts at present."
   - Regarding engineering parts and diagrams changes in our engineering department, refer to Sony service bulletins and service manual supplements.

3. The parts marked with"S" in the SP column of the exploded views and electrical spare parts list are normally required for routine service work. Orders for parts marked with "O" will be processed, but allow for additional delivery time.

4. Item with no parts number and/or no description are not stocked because they are seldom required for routine service.

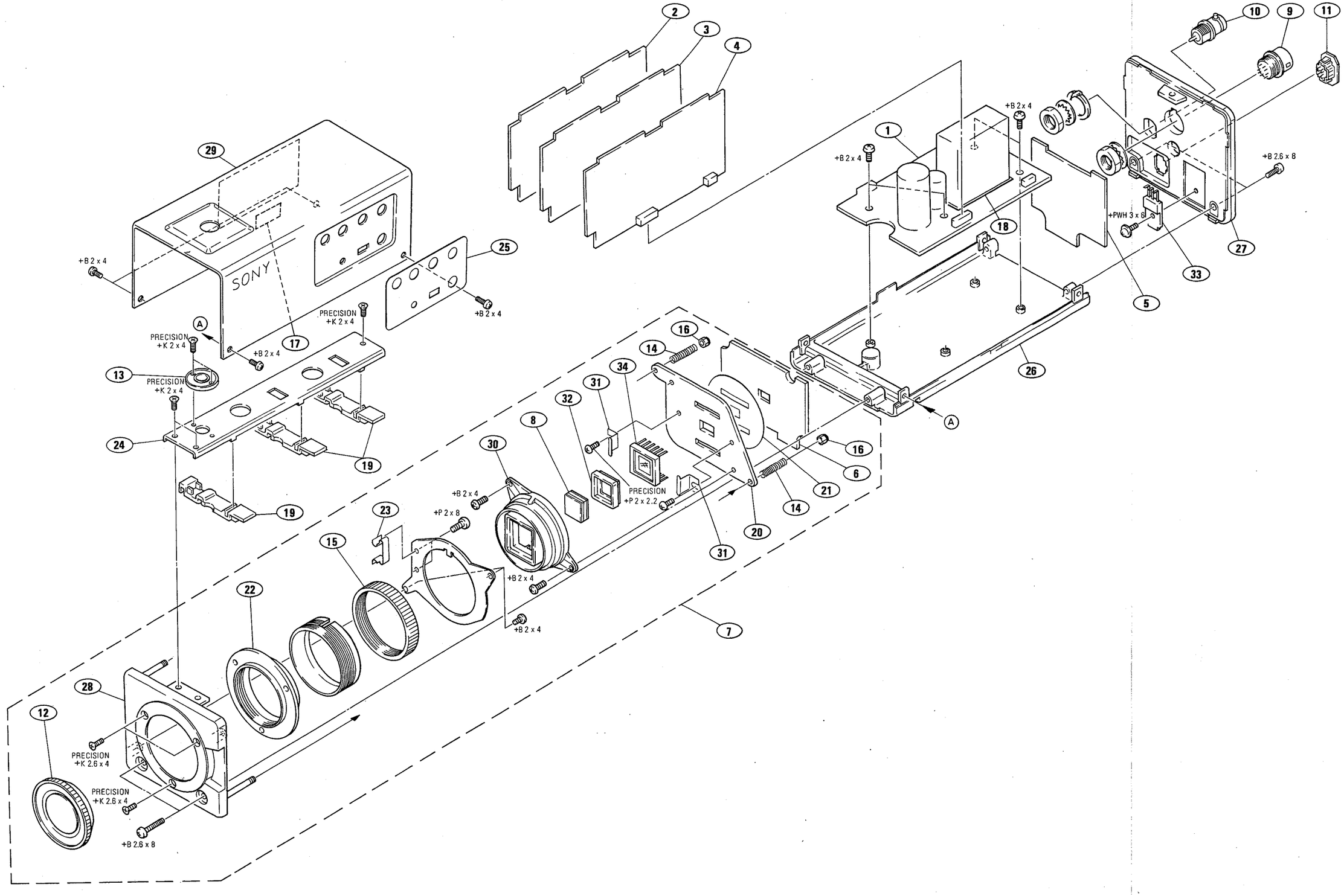
5. **Abbreviation**

REF. No.	DESCRIPTION	REF. No.	DESCRIPTION	REF. No.	DESCRIPTION
BT	BATTERY	FB	FERRITE BEAD	RV	VARIABLE RESISTOR
BZ	BUZZER	FL	FILTER	RY	RELAY
C	CAPACITOR	IC	IC	S	SWITCH
CN	CONNECTOR	L	INDUCTOR	T	TRANSFORMER
CP	COMBINATION PARTS	LV	VARIABLE INDUCTOR	TH	THERMISTOR
CV	VARIABLE CAPACITOR	Q	TRANSISTOR	TM	TIMER
D	DIODE	R	RESISTOR	VDR	VARISTOR
DL	DELAY LINE	RB	RESISTOR BLOCK	X	OSCILLATOR

All capacitors are in micro farads unless otherwise specified.
All inductors are in micro henries unless otherwise specified.
All resistors are in ohms.

EXPLODED VIEW

No.	Part No.	SP	Description
1	A-7515-166-A	o	MOUNTED BOARD, MB-300
2	A-7515-167-A	o	MOUNTED BOARD, PR-142(DXC-107)
	A-7515-168-A	o	MOUNTED BOARD, PR-142P(DXC-107P)
3	A-7515-169-A	o	MOUNTED BOARD, TG-70(DXC-107)
	A-7515-170-A	o	MOUNTED BOARD, TG-70P(DXC-107P)
4	A-7515-171-A	o	MOUNTED BOARD, FC-44(DXC-107)
	A-7515-172-A	o	MOUNTED BOARD, FC-44P(DXC-107P)
5	⚠A-7515-173-A	o	MOUNTED BOARD, CN-435
6	A-7515-174-A	o	MOUNTED BOARD, CD-38
7	A-7560-057-A	o	CCD BLOCK ASSY(DXC-107)
	A-7560-058-A	o	CCD BLOCK ASSY(DXC-107P)
8	1-547-381-12	s	FILTER BLOCK, OPTICAL
9	1-562-381-00	s	CONNECTOR, ROUND TYPE 12P
10	1-562-382-31	s	CONNECTOR, BNC
11	1-580-172-11	s	CONNECTOR,MICRO (RECEPTACLE)4P
12	2-042-385-00	s	CAP, C MOUNT
13	3-670-518-11	o	SCREW, TRIPOD
14	3-698-802-01	o	SPRING, COMPRESSION
15	3-698-814-01	o	RING, ADJUSTMENT
16	3-698-829-01	s	NUT (M2)
17	3-701-946-34	o	LABEL, FUSE RATING(DXC-107)
18	3-715-178-01	o	INSULATOR, DD CONVERTER
19	3-715-179-01	o	HOLDER, PC BOARD
20	3-715-182-01	o	PLATE, BACK
21	3-715-183-01	o	SHEET, INSULATING, CCD
22	3-715-184-01	o	HOLDER, LENS
23	3-715-187-01	o	SPRING (B), PLATE
24	3-715-188-01	o	STAY
25	3-715-189-02	o	PLATE, INDICATION
26	3-715-190-01	o	CASE, LOWER
27	3-715-191-01	o	PANEL, REAR
28	3-715-192-01	o	PANEL, FRONT
29	3-715-193-01	o	COVER, CAMERA
30	3-715-194-01	o	CASE, FILTER
31	3-725-175-01	o	STOPPER, CCD
32	3-725-177-01	o	RUBBER, SEAL
33	8-729-231-60	s	TRANSISTOR 2SD1406-YGR
34	8-752-604-56	s	IC ICX038AN-1(DXC-107)
	8-752-604-70	s	IC ICX039AN-1(DXC-107P)
	7-621-255-55	s	SCREW +P 2X8
	7-621-559-29	s	+K 2.6X4
	7-621-772-10	s	SCREW +B 2X4
	7-621-772-18	s	SCREW +B 2X4
	7-621-775-40	s	SCREW +B 2.6X8
	7-627-452-28	s	SCREW,PRECISION +K 2X4
	7-627-554-07	s	PRECISION SCREW +P 2X2.2 TYPE1
	7-682-547-04	s	SCREW +B 3X6


SONY
+B 2 x 4
PRECISION +K 2 x 4
PRECISION +K 2 x 4
PRECISION +K 2 x 4
+B 2 x 4
+B 2 x 4
+B 2 x 4
+B 2 x 4
+B 2.6 x 8
+PWH 3 x 6
PRECISION +P 2 x 2.2
+P 2 x 8
+B 2 x 4
+B 2 x 4
PRECISION +K 2.6 x 4
PRECISION +K 2.6 x 4
+B 2.6 x 8
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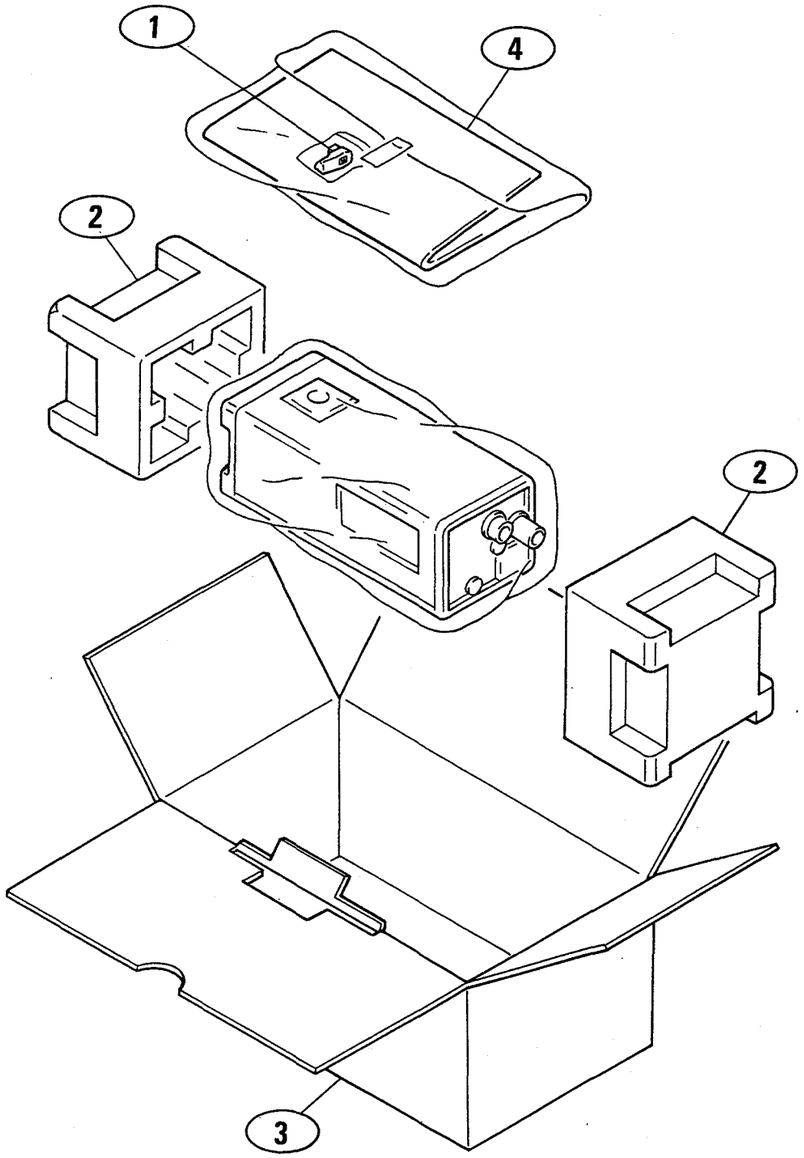
No.	Part No.	SP	Description
1	A-7475-149-A	s	CONNECTOR ASSY, MICRO
2	3-165-787-01	o	CUSHION
3	3-165-790-01	o	INDIVIDUAL CARTON (DXC-107)
	3-165-791-01	o	INDIVIDUAL CARTON (DXC-107P)
4	3-752-043-11	s	MANUAL, INSTRUCTION (DXC-107P)
	3-752-043-21	s	MANUAL, INSTRUCTION (DXC-107)



ELECTRICAL PARTS LIST

CD-38 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-7515-174-A	o	MOUNTED BOARD, CD-38
C001	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C002	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C003	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C004	1-135-162-21	s	TANTAL 33uF 10% 6.3V
C005	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C006	1-135-180-21	s	TANTAL 3.3uF 20% 6.3
C007	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C008	1-135-154-21	s	TANTAL 3.3uF 20% 20V
C009	1-135-154-21	s	TANTAL 3.3uF 20% 20V
CN001	1-568-521-11	o	PIN, CONNECTOR (PC BOARD) 13P
CN002	1-565-874-11	s	PIN, CONNECTOR (PC BOARD) 2P
Q001	8-765-420-02	s	TRANSISTOR 2SK300-3
Q001	8-765-420-03	s	TRANSISTOR 2SK300-4
Q002	8-729-905-24	s	TRANSISTOR 2SA1576-S
R001	1-216-822-11	s	METAL, CHIP 1.2K 5% 1/16W
R002	1-216-838-11	s	METAL, CHIP 27K 5% 1/16W
R003	1-216-848-11	s	METAL, CHIP 180K 5% 1/16W
R004	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R005	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R006	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W

CN-435 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	⚠A-7515-173-A	o	MOUNTED BOARD, CN-435
C301	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C302	1-135-213-21	s	TANTAL 3.3uF 20% 25V
C303	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C304	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C305	1-164-346-11	s	CERAMIC 1uF 16V
C306	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C307	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C308	1-162-945-11	s	CERAMIC 22PF 5% 50V
C309	1-162-945-11	s	CERAMIC 22PF 5% 50V
C310	1-162-945-11	s	CERAMIC 22PF 5% 50V
C311	1-162-945-11	s	CERAMIC 22PF 5% 50V
C312	1-162-945-11	s	CERAMIC 22PF 5% 50V
C313	1-162-945-11	s	CERAMIC 22PF 5% 50V
C314	1-162-945-11	s	CERAMIC 22PF 5% 50V
C315	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C316	1-162-945-11	s	CERAMIC 22PF 5% 50V
C317	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C318	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C319	1-135-155-21	s	TANTAL CHIP 4.7uF 10% 16V
CN304	1-565-882-11	o	PIN, CONNECTOR (PC BOARD) 10P
D301	8-719-106-44	s	DIODE RD9.1M-B2
D302	8-719-510-11	s	DIODE D1FS4
D303	8-719-510-11	s	DIODE D1FS4
D304	8-719-107-24	s	DIODE RD20M-B2
D305	8-719-510-11	s	DIODE D1FS4
D306	8-719-106-80	s	DIODE RD13M-B2
D307	8-719-106-08	s	DIODE RD6.2M-B2
D308	8-719-404-49	s	DIODE MA111
F301	⚠1-532-775-11	s	FUSE 0.8A 125V
F302	⚠1-532-775-11	s	FUSE 0.8A 125V
IC301	8-759-908-16	s	IC TL072CPS
L301	1-410-675-31	s	INDUCTOR 120uH
L302	1-412-026-11	s	INDUCTOR CHIP 1uH
L304	1-412-026-11	s	INDUCTOR CHIP 1uH
L305	1-412-026-11	s	INDUCTOR CHIP 1uH
L306	1-412-026-11	s	INDUCTOR CHIP 1uH
Q301	8-729-103-72	s	TRANSISTOR 2SD1005-BV
Q303	8-729-905-35	s	TRANSISTOR 2SC4081R
Q304	8-729-905-23	s	TRANSISTOR 2SA1576R
Q305	8-729-905-35	s	TRANSISTOR 2SC4081R
Q306	8-729-104-25	s	TRANSISTOR 2SB804-AV
Q307	8-729-104-25	s	TRANSISTOR 2SB804-AV
R301	1-216-055-00	s	METAL, CHIP 1.8K 5% 1/10W
R302	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R303	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R304	1-216-823-11	s	METAL, CHIP 1.5K 5% 1/16W
R305	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R306	1-216-065-00	s	METAL, CHIP 4.7K 5% 1/10W
R307	⚠1-216-428-00	s	METAL 180 5% 1W F
R308	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R309	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R310	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W

(CN-435 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R311	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R312	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R313	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R314	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R315	1-249-387-11	s	CARBON 3.3 5% 1/4W
R316	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R317	1-216-994-11	s	METAL 13K 5% 1/16W
RV301	1-226-772-11	s	RES, ADJ, METAL 4.7K
TH1	⚠1-202-860-00	s	SOLID 100 1/4W F

FC-44 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-7515-171-A	o	MOUNTED BOARD, FC-44(DXC-107)
1pc	A-7515-172-A	o	MOUNTED BOARD, FC-44P(DXC-107P)
C401	1-135-157-21	s	TANTAL 10uF 10% 6.3V
C402	1-135-177-21	s	TANTAL 1uF 10% 20V
C403	1-135-177-21	s	TANTAL 1uF 10% 20V
C404	1-135-157-21	s	TANTAL 10uF 10% 6.3V
C405	1-162-921-11	s	CERAMIC, CHIP 33PF 5% 50V
C406	1-135-180-21	s	TANTAL 3.3uF 20% 6.3V
C407	1-135-157-21	s	TANTAL 10uF 10% 6.3V
C408	1-136-710-11	s	FILM 0.022uF 5% 25V
C409	1-135-177-21	s	TANTAL 1uF 10% 20V
C410	1-135-180-21	s	TANTAL 3.3uF 20% 6.3
C411	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C412	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
C413	1-163-038-00	s	CERAMIC, CHIP 0.1uF 25V
CN401	1-568-368-21	s	CONNECTOR, BOARD TO BOARD 20P
CN402	1-568-363-21	s	CONNECTOR, BOARD TO BOARD 10P
CN403	1-565-879-11	s	PIN, CONNECTOR (PC BOARD) 7P
CT401	1-141-331-11	s	CAP, VAR, TRIMMER (CHIP)
D401	8-719-404-40	s	DIODE MA121
D402	8-719-404-40	s	DIODE MA121
D403	8-719-404-40	s	DIODE MA121
D404	8-719-404-40	s	DIODE MA121
D405	8-719-404-40	s	DIODE MA121
D406	8-719-404-40	s	DIODE MA121
D407	8-719-404-40	s	DIODE MA121
D408	8-719-404-40	s	DIODE MA121
D410	8-719-404-49	s	DIODE MA111(DXC-107P)
D411	8-719-404-40	s	DIODE MA121
IC401	8-759-038-37	s	IC MC68HC05N4-SC406670FU
IC402	8-759-988-82	s	IC MB3773PF
IC403	8-759-942-27	s	IC MB88313PF
IC404	8-759-946-00	s	IC MB88341PFV
IC405	8-759-013-92	s	IC MC74HC164F
IC406	8-759-038-46	s	IC SC7S00F
IC407	8-759-925-90	s	IC SN74HC74NS
IC408	8-759-927-46	s	IC SN74HC00NS
IC409	8-759-100-95	s	IC UPC324G2
IC410	8-759-011-65	s	IC MC74HC4053F
IC411	8-759-100-94	s	IC UPC358G2
IC412	8-759-011-65	s	IC MC74HC4053F
L401	1-412-032-11	s	INDUCTOR CHIP 100uH
L402	1-412-032-11	s	INDUCTOR CHIP 100uH
L403	1-412-031-11	s	INDUCTOR CHIP 47uH
Q401	8-729-402-84	s	TRANSISTOR XN4601
R401	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R402	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R403	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R404	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R405	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R406	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R407	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R408	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R409	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R410	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W

(FC-44 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R411	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R412	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R413	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R414	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R415	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R416	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R417	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R418	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R419	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R420	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R421	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R422	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R423	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R424	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R425	1-216-840-11	s	METAL, CHIP 39K 5% 1/16W
R426	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R427	1-216-840-11	s	METAL, CHIP 39K 5% 1/16W
R428	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R429	1-216-689-11	s	METAL, CHIP 39K 0.5% 1/10W(DXC-107)
	1-216-691-11	s	METAL, CHIP 47K 0.5% 1/10W (DXC-107P)
R430	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R431	1-216-838-11	s	METAL, CHIP 27K 5% 1/16W
R432	1-218-347-11	s	METAL 91K 5% 1/16W
R433	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W
R434	1-216-809-11	s	METAL, CHIP 100 5% 1/16W
R435	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R436	1-216-838-11	s	METAL, CHIP 27K 5% 1/16W
R437	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R438	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R439	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R440	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
S406	1-570-619-11	s	SWITCH, DIP 3-CKT
S407	1-571-787-11	s	SWITCH, TACTILE

MB-300 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-7515-166-A	o	MOUNTED BOARD, MB-300
1pc	1-946-344-11	s	HARNESS (MB-1)
1pc	3-715-178-01	o	INSULATOR, DD CONVERTER
C501	1-135-180-21	s	TANTAL 3.3uF 20% 6.3V
C502	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C503	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C504	1-135-149-21	s	TANTALUM, CHIP 2.2uF 10% 10V
C505	1-135-156-21	s	TANTAL 6.8uF 10% 6.3V
C506	1-135-157-21	s	TANTAL 10uF 10% 6.3V
C507	1-135-156-21	s	TANTAL 6.8uF 10% 6.3V
C508	1-135-156-21	s	TANTAL 6.8uF 10% 6.3V
C509	1-135-155-21	s	TANTAL CHIP 4.7uF 10% 16V
C510	1-135-149-21	s	TANTALUM, CHIP 2.2uF 10% 10V
C511	1-135-148-21	s	TANTAL 1.5uF 20% 16V
C512	1-162-966-11	s	CERAMIC, CHIP 0.0022uF 10% 50V
C513	1-135-159-21	s	TANTALUM, CHIP 10uF 10% 20V
C514	1-162-951-11	s	CERAMIC 68PF 5% 50V
C515	1-135-159-21	s	TANTALUM, CHIP 10uF 10% 20V
C516	1-162-966-11	s	CERAMIC, CHIP 0.0022uF 10% 50V
C517	1-162-966-11	s	CERAMIC, CHIP 0.0022uF 10% 50V
C518	1-135-160-21	s	TANTAL 15uF 10% 16V
C519	1-135-162-21	s	TANTAL 33uF 10% 6.3V
C520	1-135-160-21	s	TANTAL 15uF 10% 16V
C521	1-135-162-21	s	TANTAL 33uF 10% 6.3V
C522	1-124-893-11	s	ELECT 2200uF 20% 10V
C523	1-135-157-21	s	TANTAL 10uF 10% 6.3V
C524	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C525	1-124-618-11	s	ELECT 2200uF 20% 35V
C526	1-126-405-11	s	ELECT 10uF 20% 50V
C527	1-162-966-11	s	CERAMIC, CHIP 0.0022uF 10% 50V
C528	1-162-941-11	s	CERAMIC 10PF 0.5PF 50V
C529	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C530	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C531	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C532	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C533	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C534	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C535	1-135-180-21	s	TANTAL 3.3uF 20% 6.3V
CN501	1-568-336-11	s	CONNECTOR, BOARD TO BOARD 20P
CN502	1-568-336-11	s	CONNECTOR, BOARD TO BOARD 20P
CN503	1-568-336-11	s	CONNECTOR, BOARD TO BOARD 20P
CN504	1-568-336-11	s	CONNECTOR, BOARD TO BOARD 20P
CN505	1-568-336-11	s	CONNECTOR, BOARD TO BOARD 20P
CN506	1-568-331-11	s	CONNECTOR, BOARD TO BOARD 10P
D501	8-719-105-32	s	DIODE RD2.7M-B2
D502	8-719-105-32	s	DIODE RD2.7M-B2
IC501	8-759-100-94	s	IC UPC358G2
IC502	8-759-037-41	s	IC MC14577AF
IC503	8-759-037-41	s	IC MC14577AF
IC504	8-759-100-93	s	IC uPC393G2
L501	1-412-026-11	s	INDUCTOR CHIP 1uH
L502	1-412-032-11	s	INDUCTOR CHIP 100uH
L503	1-412-032-11	s	INDUCTOR CHIP 100uH
L504	1-412-030-11	s	INDUCTOR CHIP 22uH
PU501	1-466-398-11	s	CONVERTER UNIT, DC-DC

(MB-300 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
Q501	8-729-905-35	s	TRANSISTOR 2SC4081R
Q502	8-729-402-81	s	TRANSISTOR XN4501
Q503	8-729-905-23	s	TRANSISTOR 2SA1576R
Q504	8-729-403-27	s	TRANSISTOR XN4401
Q505	8-729-402-81	s	TRANSISTOR XN4501
Q506	8-729-905-23	s	TRANSISTOR 2SA1576R
R501	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R502	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R503	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R504	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R505	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R506	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R507	1-216-022-00	s	METAL, CHIP 75 5% 1/10W
R508	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R509	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R510	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R511	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R512	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R513	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R514	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R515	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R516	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W
R517	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R518	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W
R519	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R520	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R521	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R522	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R523	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R524	1-216-817-11	s	METAL, CHIP 470 5% 1/16W
R525	1-216-022-00	s	METAL, CHIP 75 5% 1/10W
R526	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R527	1-216-838-11	s	METAL, CHIP 27K 5% 1/16W
R528	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R529	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R530	1-216-850-11	s	METAL 270K 5% 1/16W
R531	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R532	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R533	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R534	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R535	1-216-811-11	s	METAL, CHIP 150 5% 1/16W
R536	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R537	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R538	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W

PR-142 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-7515-167-A	o	MOUNTED BOARD, PR-142(DXC-107)
1pc	A-7515-168-A	o	MOUNTED BOARD, PR-142P(DXC-107P)
C201	1-162-946-11	s	CERAMIC 27PF 5% 50V
C202	1-162-949-11	s	CERAMIC 47PF 5% 50V
C203	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C204	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C205	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C206	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C207	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C208	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C209	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C210	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C211	1-135-157-21	s	TANTAL 10uF 10% 6.3V
C212	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C213	1-135-177-21	s	TANTAL 1uF 10% 20V
C214	1-135-177-21	s	TANTAL 1uF 10% 20V
C215	1-135-177-21	s	TANTAL 1uF 10% 20V
C216	1-135-157-21	s	TANTAL 10uF 10% 6.3V
C217	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C218	1-135-180-21	s	TANTAL 3.3uF 20% 6.3V
C219	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C220	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C222	1-135-180-21	s	TANTAL 3.3uF 20% 6.3V
C223	1-135-180-21	s	TANTAL 3.3uF 20% 6.3V
C224	1-135-177-21	s	TANTAL 1uF 10% 20V
C225	1-135-177-21	s	TANTAL 1uF 10% 20V
C226	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C227	1-135-180-21	s	TANTAL 3.3uF 20% 6.3V
C228	1-135-180-21	s	TANTAL 3.3uF 20% 6.3V
C231	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C232	1-135-180-21	s	TANTAL 3.3uF 20% 6.3V
C233	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C234	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C235	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C236	1-135-177-21	s	TANTAL 1uF 10% 20V
C237	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C238	1-135-177-21	s	TANTAL 1uF 10% 20V
C239	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C240	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C241	1-135-157-21	s	TANTAL 10uF 10% 6.3V
C243	1-162-927-11	s	CERAMIC, CHIP 100PF 5% 50V
C244	1-135-180-21	s	TANTAL 3.3uF 20% 6.3V
C245	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C246	1-135-180-21	s	TANTAL 3.3uF 20% 6.3V
C247	1-135-180-21	s	TANTAL 3.3uF 20% 6.3V
C248	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C249	1-135-157-21	s	TANTAL 10uF 10% 6.3V
C250	1-135-180-21	s	TANTAL 3.3uF 20% 6.3V
C251	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C252	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C253	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C254	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C255	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C256	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C257	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C258	1-135-180-21	s	TANTAL 3.3uF 20% 6.3V
C259	1-164-156-11	s	CERAMIC 0.1uF 25V 0%

(PR-142 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
C260	1-135-157-21	s	TANTAL 10uF 10% 6.3V
C262	1-162-941-11	s	CERAMIC 10PF 0.5PF 50V(DXC-107)
C263	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V(DXC-107)
C266	1-135-157-21	s	TANTAL 10uF 10% 6.3V(DXC-107)
C269	1-135-157-21	s	TANTAL 10uF 10% 6.3V(DXC-107)
C270	1-135-177-21	s	TANTAL 1uF 10% 20V(DXC-107)
C271	1-135-157-21	s	TANTAL 10uF 10% 6.3V(DXC-107)
C272	1-135-157-21	s	TANTAL 10uF 10% 6.3V(DXC-107)
C273	1-162-964-11	s	CERAMIC 0.001uF 10% 50V(DXC-107)
C274	1-135-157-21	s	TANTAL 10uF 10% 6.3V(DXC-107)
C275	1-164-156-11	s	CERAMIC 0.1uF 25V 0%(DXC-107)
C276	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V(DXC-107)
CN201	1-568-368-21	s	CONNECTOR, BOARD TO BOARD 20P
CN202	1-568-368-21	s	CONNECTOR, BOARD TO BOARD 20P
FL201	1-236-894-11	s	FILTER, LOW PASS
FL202	1-415-767-11	s	DELAY LINE, LC(DXC-107)
	1-415-768-11	s	DELAY LINE, LC(DXC-107P)
FL203	1-236-758-21	s	FILTER, LOW PASS (Y.DL)(DXC-107)
	1-236-892-21	s	FILTER, LOW PASS(DXC-107P)
FL204	1-415-763-21	s	DELAY LINE, LC
FL205	1-415-769-11	s	DELAY LINE, LC
FL206	1-415-763-21	s	DELAY LINE, LC
FL207	1-236-758-21	s	FILTER, LOW PASS (Y.DL)(DXC-107)
FL208	1-236-206-11	s	FILTER, BAND PASS(DXC-107)
	1-236-265-11	s	FILTER, BAND PASS(DXC-107P)
IC201	8-752-333-26	s	IC CXL1507N
IC202	8-752-038-97	s	IC CXA1391R
IC203	8-752-332-69	s	IC CXL5504M
IC204	8-759-011-65	s	IC MC74HC4053F
IC205	8-752-038-99	s	IC CXA1392R
IC207	8-752-332-69	s	IC CXL5504M(DXC-107)
L201	1-412-029-11	s	INDUCTOR CHIP 10uH
L202	1-412-029-11	s	INDUCTOR CHIP 10uH
L203	1-412-029-11	s	INDUCTOR CHIP 10uH
L204	1-412-029-11	s	INDUCTOR CHIP 10uH
L205	1-410-209-51	s	INDUCTOR CHIP 27uH(DXC-107)
L206	1-412-029-11	s	INDUCTOR CHIP 10uH(DXC-107)
Q201	8-729-905-35	s	TRANSISTOR 2SC4081R
Q202	8-729-403-27	s	TRANSISTOR XN4401
Q203	8-729-905-23	s	TRANSISTOR 2SA1576R
Q205	8-729-905-23	s	TRANSISTOR 2SA1576R
Q206	8-729-402-84	s	TRANSISTOR XN4601
Q207	8-729-402-84	s	TRANSISTOR XN4601
Q208	8-729-905-23	s	TRANSISTOR 2SA1576R(DXC-107)
Q209	8-729-905-35	s	TRANSISTOR 2SC4081R(DXC-107)
Q210	8-729-402-81	s	TRANSISTOR XN4501(DXC-107)
Q211	8-729-402-81	s	TRANSISTOR XN4501(DXC-107)
Q212	8-729-402-84	s	TRANSISTOR XN4601
R201	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R202	1-216-823-11	s	METAL, CHIP 1.5K 5% 1/16W
R203	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R204	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R205	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R206	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
R208	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R209	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
R211	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R212	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W(DXC-107)
	1-216-836-11	s	METAL, CHIP 18K 5% 1/16W(DXC-107P)

(PR-142 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R213	1-216-836-11	s	METAL, CHIP 18K 5% 1/16W
R215	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
R217	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R218	1-216-844-11	s	METAL, CHIP 82K 5% 1/16W
R219	1-216-847-11	s	METAL, CHIP 150K 5% 1/16W
R220	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R221	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R222	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R223	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R224	1-216-840-11	s	METAL, CHIP 39K 5% 1/16W
R225	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R226	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
R227	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R229	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R230	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R231	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R232	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R233	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R234	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R235	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R236	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R237	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R238	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R239	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R240	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R241	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R242	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R243	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R244	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R247	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R248	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R249	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R250	1-216-836-11	s	METAL, CHIP 18K 5% 1/16W
R251	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R253	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
R254	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R255	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R256	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R257	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R258	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W(DXC-107P)
R259	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W(DXC-107)
R260	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R262	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
R263	1-216-864-11	s	METAL, CHIP 0 5% 1/16W(DXC-107)
R264	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R265	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R266	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
R269	1-216-864-11	s	METAL, CHIP 0 5% 1/16W(DXC-107)
R270	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
R271	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R272	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R273	1-216-864-11	s	METAL, CHIP 0 5% 1/16W(DXC-107P)
R275	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W(DXC-107)
R276	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W(DXC-107)
R279	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W(DXC-107)
R280	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W(DXC-107)
R282	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W(DXC-107)
R286	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W(DXC-107)
R287	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W(DXC-107)
R291	1-216-809-11	s	METAL, CHIP 100 5% 1/16W(DXC-107)

(PR-142 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R292	1-216-819-11	s	METAL, CHIP 680 5% 1/16W(DXC-107)
R293	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W(DXC-107)
R294	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W(DXC-107)
R295	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W(DXC-107)
R297	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W(DXC-107)
R298	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W(DXC-107)
R299	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W(DXC-107)
R300	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W(DXC-107)
R301	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W(DXC-107)
R302	1-216-819-11	s	METAL, CHIP 680 5% 1/16W(DXC-107)
R303	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W(DXC-107)
R304	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W(DXC-107)
R305	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W(DXC-107P)
R306	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R307	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R310	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R311	1-216-828-11	s	METAL, CHIP 3.9K 5% 1/16W(DXC-107)
R312	1-216-819-11	s	METAL, CHIP 680 5% 1/16W(DXC-107)
R313	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R314	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R315	1-216-848-11	s	METAL, CHIP 180K 5% 1/16W
R316	1-216-844-11	s	METAL, CHIP 82K 5% 1/16W
R317	1-216-864-11	s	METAL, CHIP 0 5% 1/16W
RV201	1-238-092-11	s	RES, ADJ CERMET 47K
RV202	1-238-092-11	s	RES, ADJ CERMET 47K
RV203	1-238-092-11	s	RES, ADJ CERMET 47K
RV204	1-238-092-11	s	RES, ADJ CERMET 47K
RV205	1-238-092-11	s	RES, ADJ CERMET 47K
RV206	1-238-092-11	s	RES, ADJ CERMET 47K
RV207	1-238-092-11	s	RES, ADJ CERMET 47K
RV208	1-238-092-11	s	RES, ADJ CERMET 47K
RV209	1-238-092-11	s	RES, ADJ CERMET 47K
RV210	1-238-092-11	s	RES, ADJ CERMET 47K
RV211	1-238-092-11	s	RES, ADJ CERMET 47K
RV212	1-238-092-11	s	RES, ADJ CERMET 47K
RV213	1-238-092-11	s	RES, ADJ CERMET 47K
RV214	1-238-092-11	s	RES, ADJ CERMET 47K
RV215	1-238-240-11	s	RES, ADJ CERMET 220(DXC-107)
S201	1-572-328-11	s	SWITCH, CHIP(DXC-107)

TG-70 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-7515-169-A	o	MOUNTED BOARD, TG-70(DXC-107)
1pc	A-7515-170-A	o	MOUNTED BOARD, TG-70P(DXC-107P)
1pc	1-946-342-11	s	HARNESS (TG-1)
1pc	1-946-343-11	s	HARNESS (TG-2)
C101	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C102	1-126-199-11	s	ELECT 6.8uF 20% 35V
C103	1-126-194-21	s	ELECT 1.5uF 20% 50V
C104	1-164-005-11	s	CERAMIC, CHIP 0.47uF 25V
C105	1-126-194-21	s	ELECT 1.5uF 20% 50V
C106	1-135-159-21	s	TANTALUM, CHIP 10uF 10% 20V
C107	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C108	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C109	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C110	1-135-157-21	s	TANTAL 10uF 10% 6.3V
C111	1-162-949-11	s	CERAMIC 47PF 5% 50V
C112	1-162-949-11	s	CERAMIC 47PF 5% 50V
C113	1-162-927-11	s	CERAMIC, CHIP 100PF 5% 50V
C115	1-162-949-11	s	CERAMIC 47PF 5% 50V
C116	1-162-947-11	s	CERAMIC 33PF 5% 50V
C118	1-162-915-11	s	CERAMIC, CHIP 10PF 5PF 50V
C119	1-162-919-11	s	CERAMIC, CHIP 22PF 5% 50V
C120	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C121	1-162-949-11	s	CERAMIC 47PF 5% 50V
C122	1-135-180-21	s	TANTAL 3.3uF 20% 6.3V
C123	1-135-157-21	s	TANTAL 10uF 10% 6.3V
C124	1-135-157-21	s	TANTAL 10uF 10% 6.3V
C125	1-135-180-21	s	TANTAL 3.3uF 20% 6.3V
C126	1-135-180-21	s	TANTAL 3.3uF 20% 6.3V
C127	1-135-180-21	s	TANTAL 3.3uF 20% 6.3V
C129	1-135-145-11	s	TANTALUM, CHIP 0.47uF 10% 35V
C130	1-135-145-11	s	TANTALUM, CHIP 0.47uF 10% 35V
C131	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C132	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C133	1-135-157-21	s	TANTAL 10uF 10% 6.3V
C134	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C135	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C136	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C137	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C138	1-162-947-11	s	CERAMIC 33PF 5% 50V
C139	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C141	1-164-337-11	s	CERAMIC 2.2uF 16V
C142	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C143	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C144	1-126-205-11	s	ELECT 47uF 20% 6.3V
C145	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C146	1-135-180-21	s	TANTAL 3.3uF 20% 6.3V
C149	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C150	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C152	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C153	1-135-155-21	s	TANTAL CHIP 4.7uF 10% 16V
C154	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C155	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C157	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C158	1-162-910-11	s	CERAMIC, CHIP 5PF 0.25PF 50V (DXC-107)
	1-162-909-11	s	CERAMIC, CHIP 4PF 0.25PF 50V (DXC-107P)

(TG-70 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
C159	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C160	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C161	1-135-157-21	s	TANTAL 10uF 10% 6.3V
C162	1-126-193-11	s	ELECT 1uF 20% 50V
C163	1-162-949-11	s	CERAMIC 47PF 5% 50V
C164	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C165	1-135-167-21	s	TANTAL 68uF 20% 6.3V
C166	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C167	1-135-167-21	s	TANTAL 68uF 20% 6.3V
C169	1-162-949-11	s	CERAMIC 47PF 5% 50V
C170	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C171	1-162-949-11	s	CERAMIC 47PF 5% 50V
C173	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C174	1-162-949-11	s	CERAMIC 47PF 5% 50V(DXC-107P)
C176	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C177	1-162-949-11	s	CERAMIC 47PF 5% 50V
C178	1-135-070-00	s	TANTALUM, CHIP 0.1uF 10% 35V
C179	1-135-177-21	s	TANTAL 1uF 10% 20V
C180	1-162-942-11	s	CERAMIC 12PF 5% 50V
C181	1-162-916-11	s	CERAMIC, CHIP 12PF 5% 50V(DXC-107P)
C182	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C184	1-162-965-11	s	CERAMIC 0.0015uF 10% 50V
C186	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V (DXC-107P)
C187	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C188	1-164-156-11	s	CERAMIC 0.1uF 25V 0%
C189	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C190	1-135-157-21	s	TANTAL 10uF 10% 6.3V(DXC-107P)
C191	1-135-177-21	s	TANTAL 1uF 10% 20V(DXC-107P)
C192	1-162-970-11	s	CERAMIC, CHIP 0.01uF 10% 25V
C193	1-135-167-21	s	TANTAL 68uF 20% 6.3V
CN101	1-568-368-21	s	CONNECTOR, BOARD TO BOARD 20P
CN102	1-568-368-21	s	CONNECTOR, BOARD TO BOARD 20P
CT102	1-141-347-11	s	CAP, TRIMMER 10PF(DXC-107P)
D101	8-719-404-52	s	DIODE MA143
D102	8-719-404-32	s	DIODE MA141WA
D103	8-719-404-32	s	DIODE MA141WA
D104	8-719-949-87	s	DIODE 1T32A-04
D105	8-713-300-88	s	DIODE 1T33C-01
D106	8-719-404-46	s	DIODE MA110
D107	8-719-949-87	s	DIODE 1T32A-04
IC101	8-752-327-48	s	IC CXD1250N
IC102	8-752-037-85	s	IC CXA1390R
IC104	8-752-335-49	s	IC CXD1252AR
IC106	8-752-335-47	s	IC CXD1216M
IC107	8-752-332-67	s	IC CXD1217M
IC109	8-759-111-51	s	IC uPD5555G
L101	1-412-026-11	s	INDUCTOR CHIP 1uH
L103	1-412-029-11	s	INDUCTOR CHIP 10uH
L104	1-412-029-11	s	INDUCTOR CHIP 10uH
L105	1-410-204-31	s	INDUCTOR CHIP 10uH
Q101	8-729-421-23	s	TRANSISTOR XN1216
Q102	8-729-905-35	s	TRANSISTOR 2SC4081R
Q103	8-729-403-42	s	TRANSISTOR XN1401
Q104	8-729-905-23	s	TRANSISTOR 2SA1576R
Q106	8-729-402-84	s	TRANSISTOR XN4601

(TG-70 BOARD)

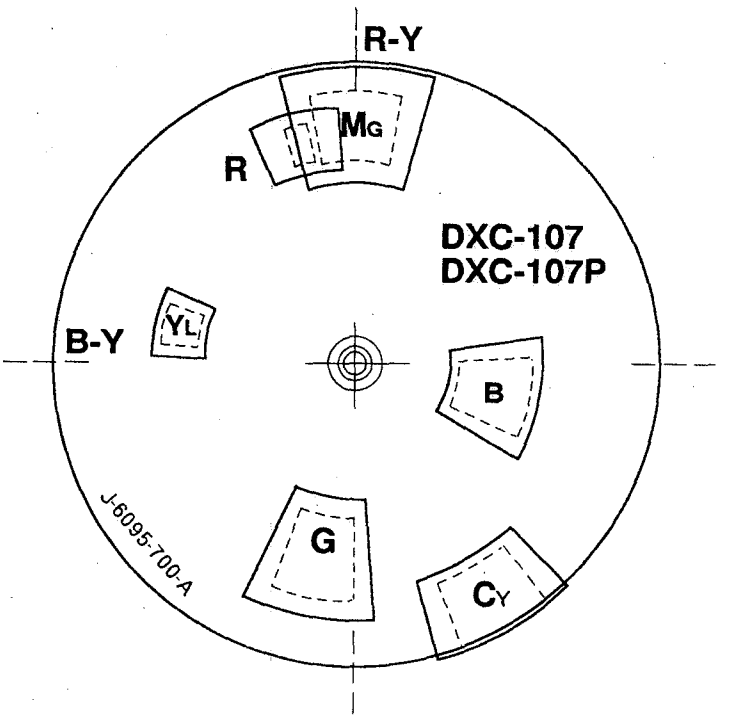
Ref. No. or Q'ty	Part No.	SP	Description
Q107	8-729-905-23	s	TRANSISTOR 2SA1576R
Q108	8-729-402-84	s	TRANSISTOR XN4601
Q109	8-729-402-84	s	TRANSISTOR XN4601
Q110	8-729-905-35	s	TRANSISTOR 2SC4081R
Q111	8-729-402-42	s	TRANSISTOR UN5213(DXC-107P)
Q112	8-729-402-84	s	TRANSISTOR XN4601(DXC-107P)
R101	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R102	1-216-850-11	s	METAL 270K 5% 1/16W
R103	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R104	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R105	1-216-843-11	s	METAL, CHIP 68K 5% 1/16W
R106	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R107	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R108	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R109	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R110	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R111	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R112	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R113	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R114	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R115	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R116	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R117	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R118	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R119	1-216-829-11	s	METAL, CHIP 4.7K 5% 1/16W
R120	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R121	1-216-827-11	s	METAL, CHIP 3.3K 5% 1/16W
R122	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R124	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R125	1-216-834-11	s	METAL, CHIP 12K 5% 1/16W
R127	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R128	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R129	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R131	1-216-834-11	s	METAL, CHIP 12K 5% 1/16W
R133	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R134	1-216-813-11	s	METAL, CHIP 220 5% 1/16W
R135	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R136	1-216-864-11	s	METAL, CHIP 0 5% 1/16W(DXC-107P)
R138	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R139	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R140	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R141	1-216-838-11	s	METAL, CHIP 27K 5% 1/16W
R142	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R143	1-216-834-11	s	METAL, CHIP 12K 5% 1/16W
R144	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R145	1-216-838-11	s	METAL, CHIP 27K 5% 1/16W
R146	1-216-838-11	s	METAL, CHIP 27K 5% 1/16W
R147	1-216-840-11	s	METAL, CHIP 39K 5% 1/16W
R148	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R149	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R150	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W
R152	1-216-843-11	s	METAL, CHIP 68K 5% 1/16W
R153	1-216-846-11	s	METAL, CHIP 120K 5% 1/16W
R154	1-216-852-11	s	METAL, CHIP 390K 5% 1/16W
R155	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R156	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W

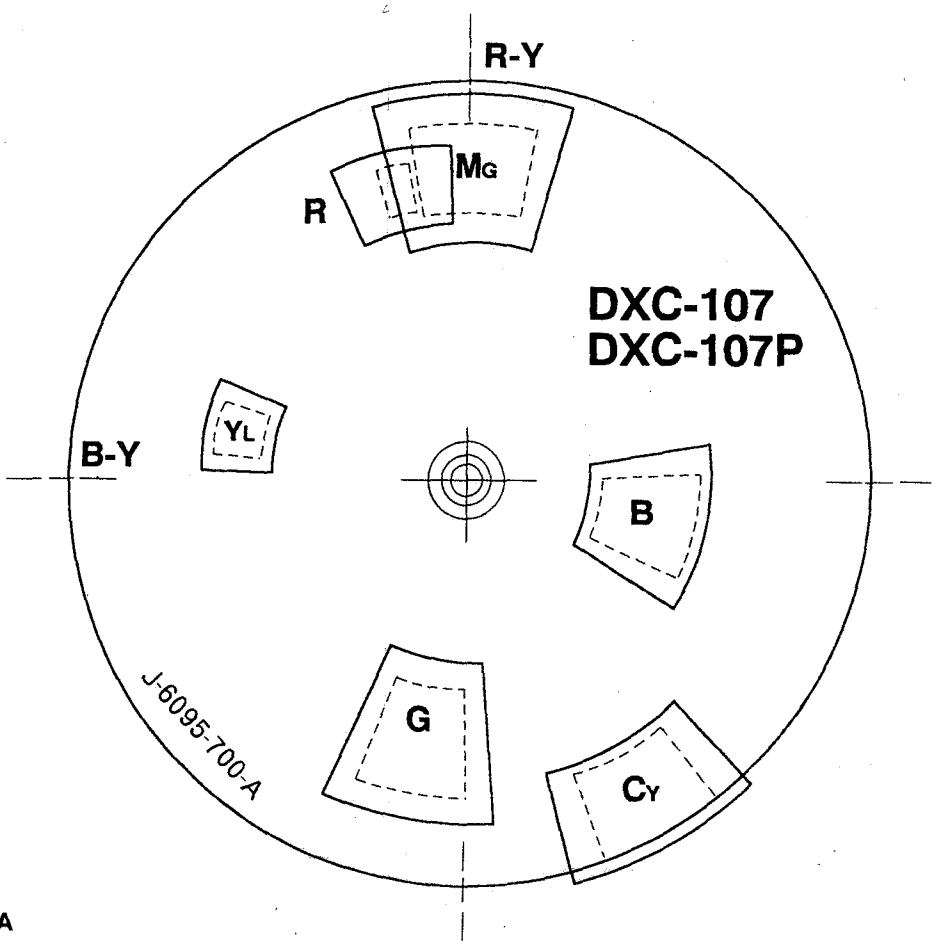
(TG-70 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R158	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R159	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R160	1-216-864-11	s	METAL, CHIP 0 5% 1/16W(DXC-107)
R161	1-216-864-11	s	METAL, CHIP 0 5% 1/16W(DXC-107P)
R162	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R163	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R164	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R166	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R167	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W(DXC-107P)
R168	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W(DXC-107P)
R169	1-216-857-11	s	METAL, CHIP 1M 5% 1/16W
R170	1-216-864-11	s	METAL, CHIP 0 5% 1/16W(DXC-107)
R171	1-216-864-11	s	METAL, CHIP 0 5% 1/16W(DXC-107P)
R172	1-216-864-11	s	METAL, CHIP 0 5% 1/16W(DXC-107)
R173	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R174	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W
R175	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
R176	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W(DXC-107)
	1-216-837-11	s	METAL, CHIP 22K 5% 1/16W(DXC-107P)
R177	1-216-843-11	s	METAL, CHIP 68K 5% 1/16W(DXC-107)
	1-216-838-11	s	METAL, CHIP 27K 5% 1/16W(DXC-107P)
R178	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R179	1-216-825-11	s	METAL, CHIP 2.2K 5% 1/16W
R180	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R181	1-216-839-11	s	METAL, CHIP 33K 5% 1/16W
R182	1-216-821-11	s	METAL, CHIP 1K 5% 1/16W
R183	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W(DXC-107P)
R184	1-216-842-11	s	METAL, CHIP 56K 5% 1/16W(DXC-107P)
R185	1-216-831-11	s	METAL, CHIP 6.8K 5% 1/16W(DXC-107P)
R186	1-216-830-11	s	METAL, CHIP 5.6K 5% 1/16W
R187	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W(DXC-107P)
R188	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W(DXC-107P)
R189	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W(DXC-107P)
R190	1-216-841-11	s	METAL, CHIP 47K 5% 1/16W(DXC-107P)
R191	1-216-833-11	s	METAL, CHIP 10K 5% 1/16W(DXC-107P)
RV101	1-238-092-11	s	RES, ADJ CERMET 47K
RV102	1-238-091-11	s	RES, ADJ CERMET 22K
RV103	1-238-091-11	s	RES, ADJ CERMET 22K
X101	1-579-121-11	s	VIBRATOR, CRYSTAL 28.63636MHz (DXC-107)
	1-579-122-11	s	VIBRATOR, CRYSTAL 28.375MHz (DXC-107P)
X102	1-567-733-11	s	VIBRATOR, CRYSTAL 17.734475MHz (DXC-107P)

FIXTURE

No.	Part No.	SP	Description
	J-6095-210-A	S	EXTENSION BOARD 10P
	J-6095-220-A	S	EXTENSION BOARD 20P
	J-6095-700-A	S	VECTORSCOPE SCALE


R-Y
MG
R
DXC-107
DXC-107P
B-Y
YL
B
J-6095-700-A
G
CY


R-Y
MG
R
DXC-107
DXC-107P
B-Y
YL
B
J-6095-700-A
G
CY

J-6095-700-A